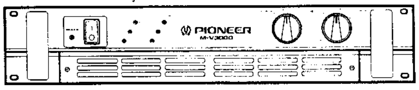
PIONEER

The Art of Entertainment

Service Manual



ORDER NO.
ARP2602

PROFESSIONAL POWER AMPLIFIER

M-V3000

M-V2000

M – V3000 AND M – V2000 HAVE THE FOLLOWING :

Type	Model		Power Requirement	Remarks
	M – V3000	M – V2000		
KUC	○	○	AC 120 V only	
HEBWZ	○	○	AC 220 – 230 V, 240 V (Switchable)	

- **This manual is applicable to the following: M – V3000/KUC and HEBWZ; M – V2000/KUC and HEBWZ.**
- **For the following : M – V3000/HEBWZ; M – V2000/KUC and HEBWZ, refer to page 51.**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

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1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING
Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5).
When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

NOTICE
(FOR CANADIAN MODEL ONLY)
Fuse symbols -▮▭⊞- (fast operating fuse) and/or -▮▭⊠- (slow operating fuse) on PCB indicate that replacement parts must be of identical designation.

REMARQUE
(POUR MODÈLE CANADIEN SEULEMENT)
Les symboles de fusible -▮▭⊞- (fusible de type rapide) et/ou -▮▭⊠- (fusible de type lent) sur CCI indiquent que les pièces de remplacement doivent avoir la même désignation.

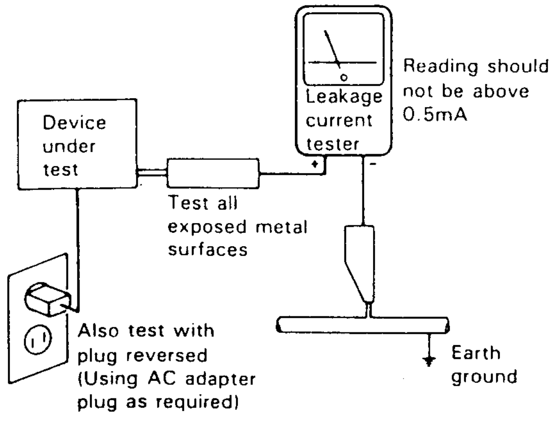
(FOR USA MODEL ONLY)

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technician.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.


Leakage current tester
Reading should not be above 0.5mA
Device under test
+
-
Test all exposed metal surfaces
Also test with plug reversed (Using AC adapter plug as required)
Earth ground

AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a ⚠ on the schematics and on the parts list in this Service Manual.
The use of a substitute replacement component which dose not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

2. EXPLODED VIEWS, PACKING AND PARTS LIST

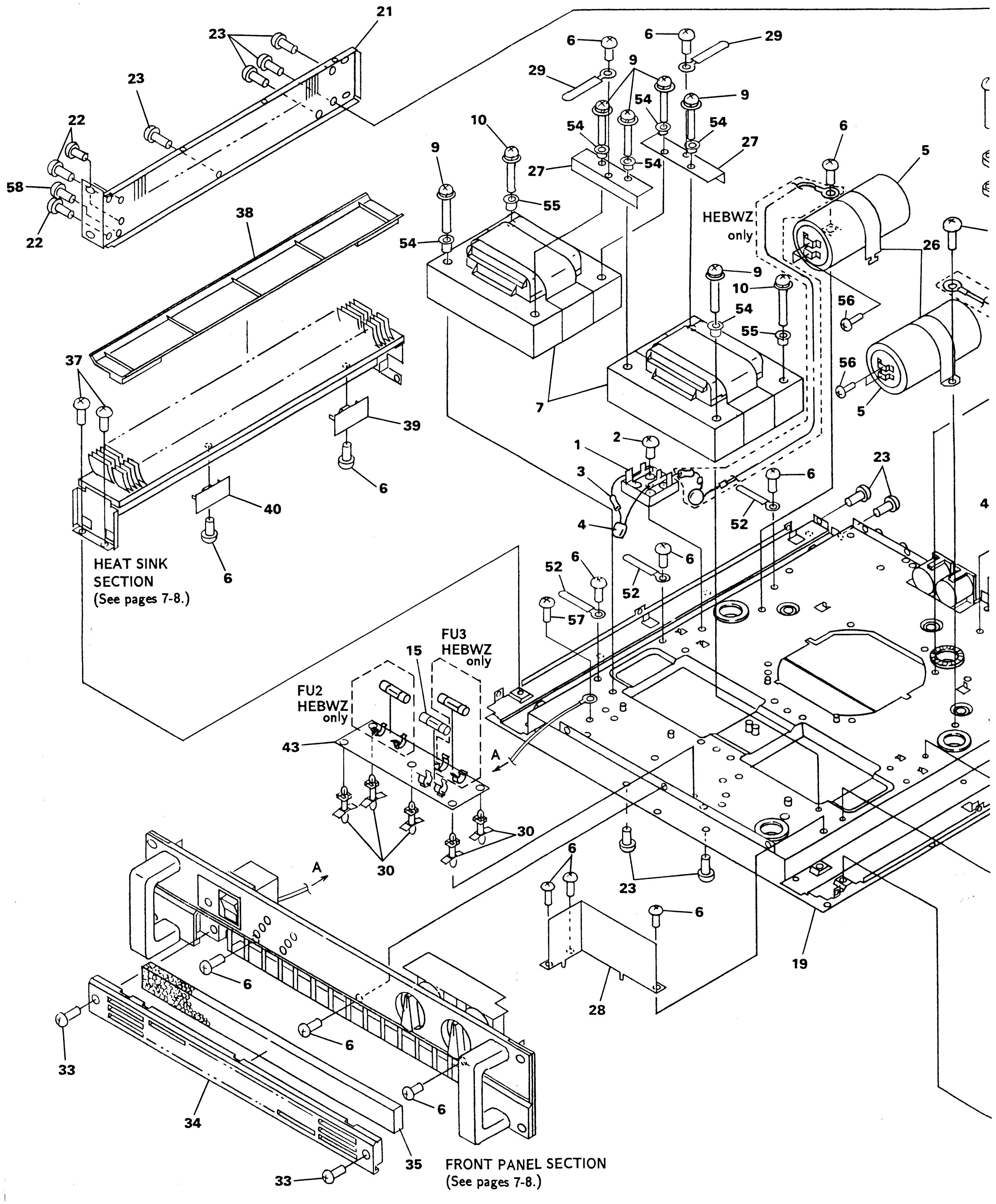
NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

2.1 EXTERIOR SECTION

Parts List

Mark	No.	Description	Parts No.
⚠	1	D1,D2 BRIDGE DIODE	25D4B41
	2	SCREW	BBZ30P120FZK
⚠	3	R1,R2 FUSIBLE RESISTOR	RFA1/4PS4R7J
	4	C3,C4 MYLAR FILM CAPACITOR	CQMA104K250
⚠	5	C1,C2 ELECTR.CAPACITOR	ACH1228
	6	SCREW	BBZ30P080FMC
⚠	7	T1,T2 POWER TRANSFORMER	ATS1429
⚠	8	T3 POWER TRANSFORMER	ATT1199
	9	SCREW	PMB50P450FMC
	10	SCREW	PMZ50P450FMC
NSP	11	TERMINAL	AKE−039
⚠	12	CN A SPEAKER TERMINAL 2−P	AKE1037
⚠	13	CN B SPEAKER TERMINAL 2−P	AKE1038
	14	SCREW	BPZ30P080FZK
⚠	15	FU1 (800mA,125V)	AEK−118
⚠	16	AC POWER CORD	ADG1121
⚠	17	AC MOTOR(FAN)	AXM1015
	18	SCREW	PMB30P450FMC
NSP	19	CHASSIS	ANA1190
NSP	20	SIDE FRAME	ANA1207
NSP	21	SIDE FRAME	ANA1208
	22	SCREW	BBZ40P120FZK
	23	SCREW	BBZ30P080FZK
NSP	24	REAR PANEL	ANC1911
	25	SCREW	BMZ30P080FCU
NSP	26	CAP.HOLDER(MET)	ANG1711
NSP	27	PLATE	ANG1746
NSP	28	SHIELD PLATE A(MET)	ANK1213
NSP	29	BINDER	AEC−826
NSP	30	PCB SPACER	AEC1084
NSP	31	PCB SUPPORT	AEC1477
	32	NUTS	NK70FMC
	33	SCREW	PMZ30P150FZK
NSP	34	FRONT MOULD	AMR2455
NSP	35	AIR FILTER(SPO)	AED1144
NSP	36	HEAT SINK	ANH1393
	37	SCREW	BBZ30P060FMC
NSP	38	HEAT SINK COVER(RUB)	AEB1223
	39	BIAS 1 ASSY	AWZ4204
	40	BIAS 2 ASSY	AWZ4205
	41	BIAS 3 ASSY	AWZ4206
	42	BIAS 4 ASSY	AWZ4207
	43	PRIMARY ASSY	AWZ4201
	44	PROTECTION ASSY	AWZ4226
	45	NUTS	NB40FMC
	46	WASHER	WG30FUC
NSP	47	X−RAY SHIELD PLATE	ANG1278
NSP	48	PLATE	ANG1720
	49	AC CORD STOPPER	BEC1024
NSP	50	WIND PLATE	ANG1733
	51	SCREW	BBT30P080FMC
	52	BINDER	AEP−215
	53	WASHER	NKX2FZK
	54	WASHER	AEC1465
	55	WASHER	WH50FMC
	56	SCREW	PMZ40P060FMC
	57	SCREW	PMB40P100BNI
	58	SCREW	BBT30P080FZK



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No.

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MC
P150FZK
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393
P060FMC
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204
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206
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MC

FUC
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720
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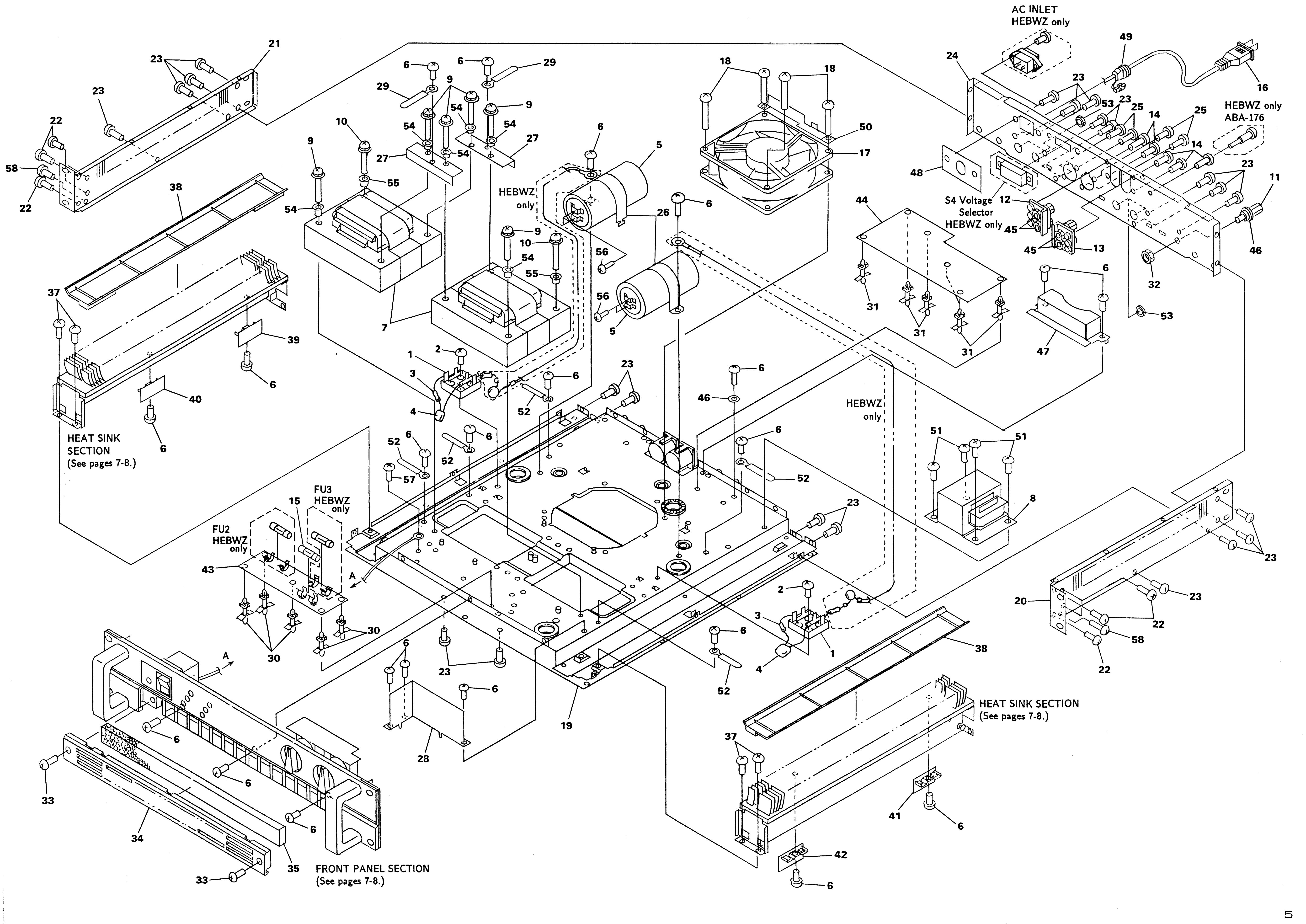
733

P080FMC
215
FZK
65
FMC

P060FMC
0P100BNI
P080FZK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A
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AC INLET
HEBWZ only
HEBWZ only
ABA-176
HEBWZ
only
S4 Voltage
Selector
HEBWZ only
HEBWZ
only
FU2
HEBWZ
only
FU3
HEBWZ
only
HEAT SINK
SECTION
(See pages 7-8.)
HEAT SINK SECTION
(See pages 7-8.)
FRONT PANEL SECTION
(See pages 7-8.)
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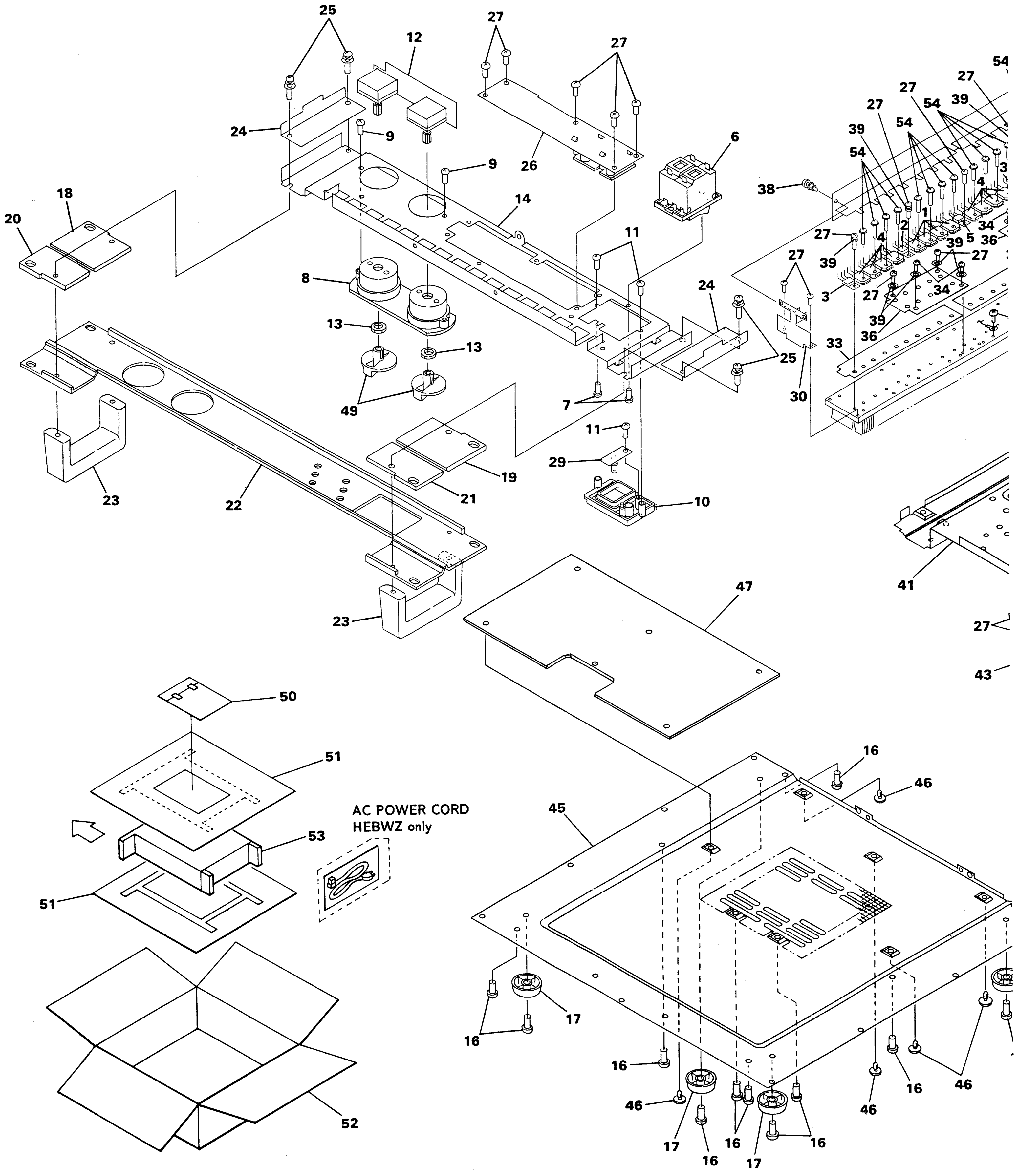
2.2 FRONT PANEL, BASE AND PACKING SECTION

Parts List

Mark	No.	Description	Parts No.
⚠	1	Q17−Q32 TRANSISTOR	2SA1516P
⚠	2	Q37−Q40 TRANSISTOR	2SA985A
⚠	3	Q33−Q36 TRANSISTOR	2SC2275A
⚠	4	Q1−Q16 TRANSISTOR	2SC3907P
⚠	5	S1,S2 THERMAL SWITCH	AST1001
⚠	6	S3 CIRCUIT BREAKER	ASM1001
	7	SCREW	PMZ30P080FMC
NSP	8	KNOB MOULD	AMR2453
	9	SCREW	BPZ30P080FMC
NSP	10	SWITCH MOULD	AMR2452
	11	SCREW	BPZ26P080FMC
	12	ATT ASSY	AWZ4203
	13	NUT	NK90FMC
NSP	14	PANEL STAY	AND1053
	15	COVER (MET)	ANE1371
	16	SCREW	BBZ30P080FZK
	17	CABINET BUMPER	AEC−613
NSP	18	SPACER A(MET)	ANG1712
NSP	19	SPACER B(MET)	ANG1713
NSP	20	SPACER C(MET)	ANG1714
NSP	21	SPACER D(MET)	ANG1715
	22	FRONT PANEL	ANB1530
	23	HANDLE	AAH1061
NSP	24	BRACKET	ANG1732
	25	SCREW	BMZ40P160FZB
	26	DISPLAY ASSY	AWZ4202
	27	SCREW	BBZ30P080FMC
	28	SCREW	BBT30P080FZK
	29	LED ASSY	AWZ4296
NSP	30	HEAT SINK BRACKET A	ANG1716
NSP	31	HEAT SINK BRACKET B	ANG1717
NSP	32	HEAT SINK	ANH1393
NSP	33	SHEET L(RUB)	AEB1229
NSP	34	SCREW	BBZ30P100FMC
	35	……………	
NSP	36	HEAT PLATE(MET)	ANG1734
	37	POWER A ASSY	AWZ4210
	38	PIN GROMMET	AEC1015
NSP	39	SHIELD WASHER	AEC1402
	40	POWER B ASSY	AWZ4209
NSP	41	CHASSIS	ANA1190
NSP	42	PCB HOLDER	AEC1088
NSP	43	ONE TOUCH BUSH	AEC1464
NSP	44	BINDER	AEC−826
	45	COVER ASSEMBLY	ANE1376
NSP	46	CANOE CLIP	AEC−809
NSP	47	BARRIER A(PLS)	AEC1425
	48	DRIVE ASSY	AWZ4208
	49	VOLUME KNOB	AAB1296
	50	OPE. INSTRUCTIONS(ENGLISH)	ARB1395
	51	PAD	AHA1543
	52	PACKING CASE	AHD2447
NSP	53	SHEET	AHG1040
	54	SCREW	ABA1082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AC POWER CORD
HEBWZ only
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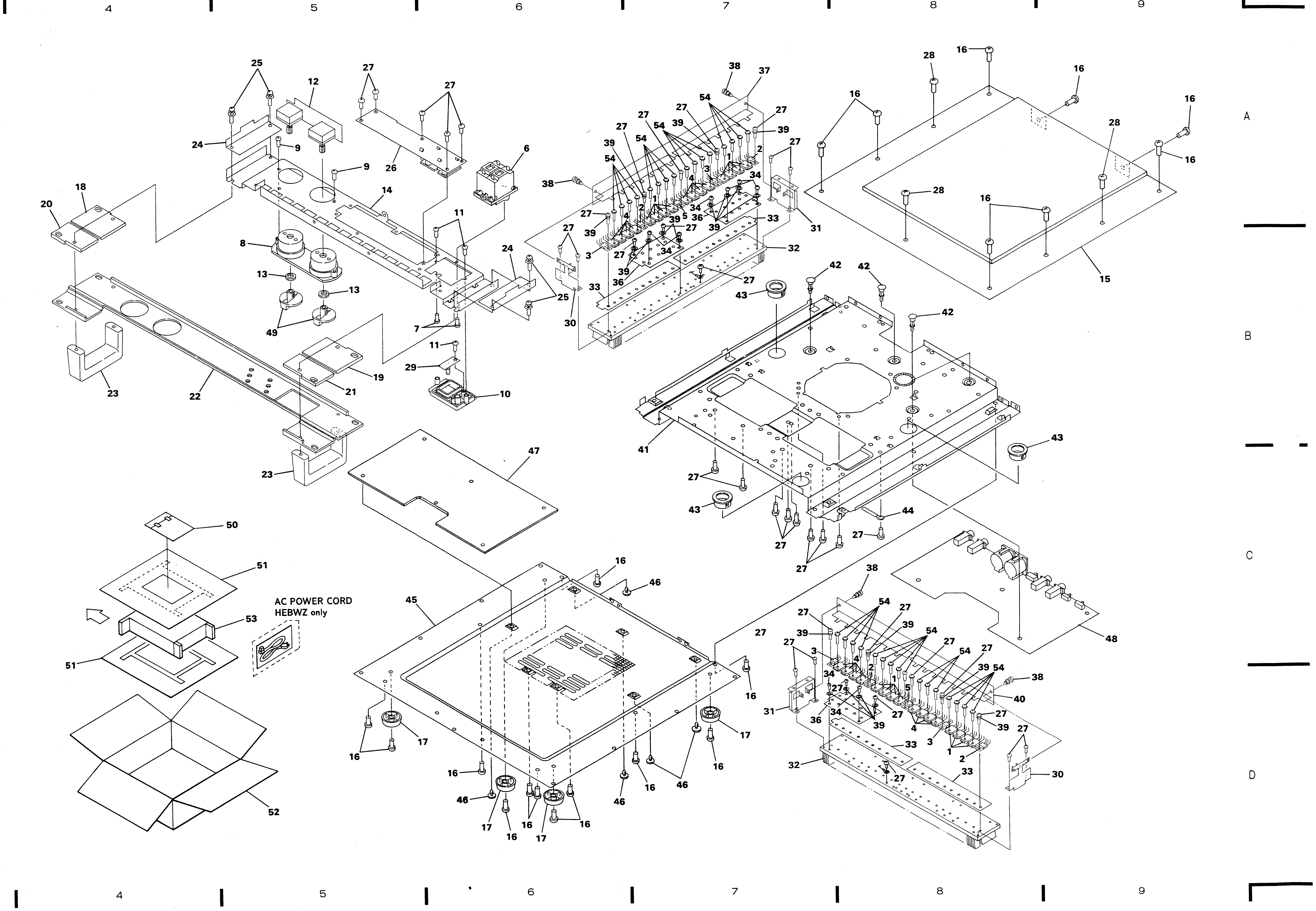
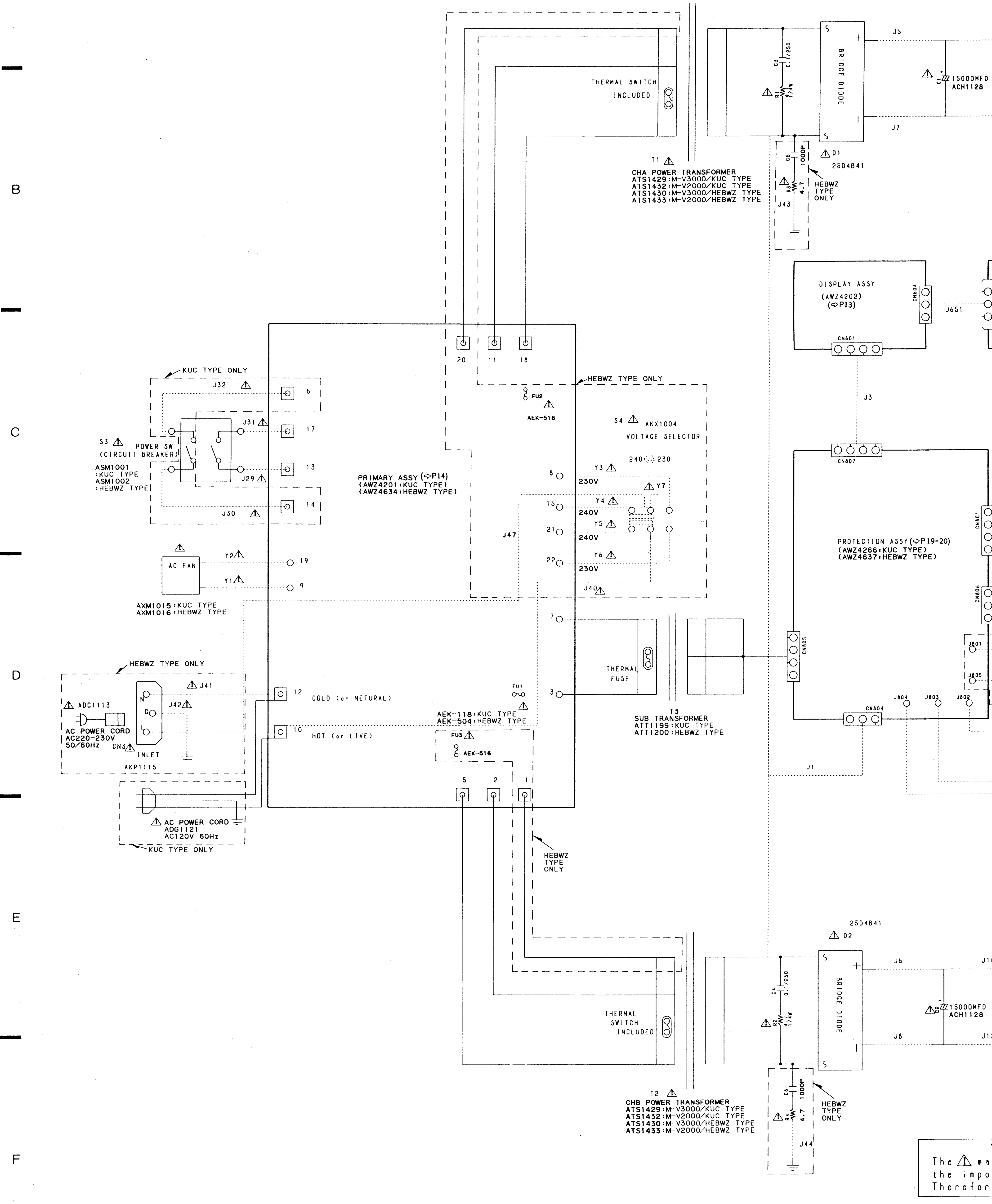

A
B
C
D
AC POWER CORD
HEBWZ only

3. SCHEMATIC AND PCB CONNECTION DIAGRAMS

3.1 OVERALL WIRING DIAGRAM


A
B
C
D
E
F
THERMAL SWITCH INCLUDED
T1 ⚠
CHA POWER TRANSFORMER
ATS1429:M-V3000/KUC TYPE
ATS1432:M-V2000/KUC TYPE
ATS1430:M-V3000/HEBWZ TYPE
ATS1433:M-V2000/HEBWZ TYPE
C3 0.1/250
R1 1/4W
BRIDGE DIODE
⚠ D1
2SD4B41
C5 1000P
R3 4.7
J43
HEBWZ TYPE ONLY
J5
J7
⚠ C1 15000MFD ACH1128
DISPLAY ASSY
(AWZ4202)
(⇨P13)
CN604
J651
CN601
J3
CN807
PROTECTION ASSY (⇨P19-20)
(AWZ4266:KUC TYPE)
(AWZ4637:HEBWZ TYPE)
CN801
CN806
CN805
J801
J805
J804
J803
J802
CN804
J1
20
11
18
HEBWZ TYPE ONLY
FU2 ⚠ AEK-516
S4 ⚠ AKX1004
VOLTAGE SELECTOR
240 230
8
Y3 ⚠
230V
⚠ Y7
15
Y4 ⚠
240V
21
Y5 ⚠
240V
J47
22
Y6 ⚠
230V
J40 ⚠
7
3
THERMAL FUSE
T3
SUB TRANSFORMER
ATT1199:KUC TYPE
ATT1200:HEBWZ TYPE
PRIMARY ASSY (⇨P14)
(AWZ4201:KUC TYPE)
(AWZ4634:HEBWZ TYPE)
KUC TYPE ONLY
J32 ⚠
6
J31 ⚠
17
S3 ⚠
POWER SW
(CIRCUIT BREAKER)
ASM1001
:KUC TYPE
ASM1002
:HEBWZ TYPE
13
J29 ⚠
J30 ⚠
14
⚠
AC FAN
Y2 ⚠
19
Y1 ⚠
9
AXM1015:KUC TYPE
AXM1016:HEBWZ TYPE
HEBWZ TYPE ONLY
⚠ ADG1113
AC POWER CORD
AC220-230V
50/60Hz
CN3 ⚠
INLET
AKP1115
⚠ J41
J42 ⚠
N
G
L
12
COLD (or NETURAL)
10
HOT (or LIVE)
FU1
⚠
AEK-118:KUC TYPE
AEK-504:HEBWZ TYPE
FU3 ⚠
AEK-516
5
2
1
⚠ AC POWER CORD
ADG1121
AC120V 60Hz
KUC TYPE ONLY
HEBWZ TYPE ONLY
2SD4B41
⚠ D2
BRIDGE DIODE
C4 0.1/250
R2 1/4W
J6
J8
⚠ C2 15000MFD ACH1128
THERMAL SWITCH INCLUDED
T2 ⚠
CHB POWER TRANSFORMER
ATS1429:M-V3000/KUC TYPE
ATS1432:M-V2000/KUC TYPE
ATS1430:M-V3000/HEBWZ TYPE
ATS1433:M-V2000/HEBWZ TYPE
C6 1000P
R4 4.7
J44
HEBWZ TYPE ONLY
The ⚠ ma
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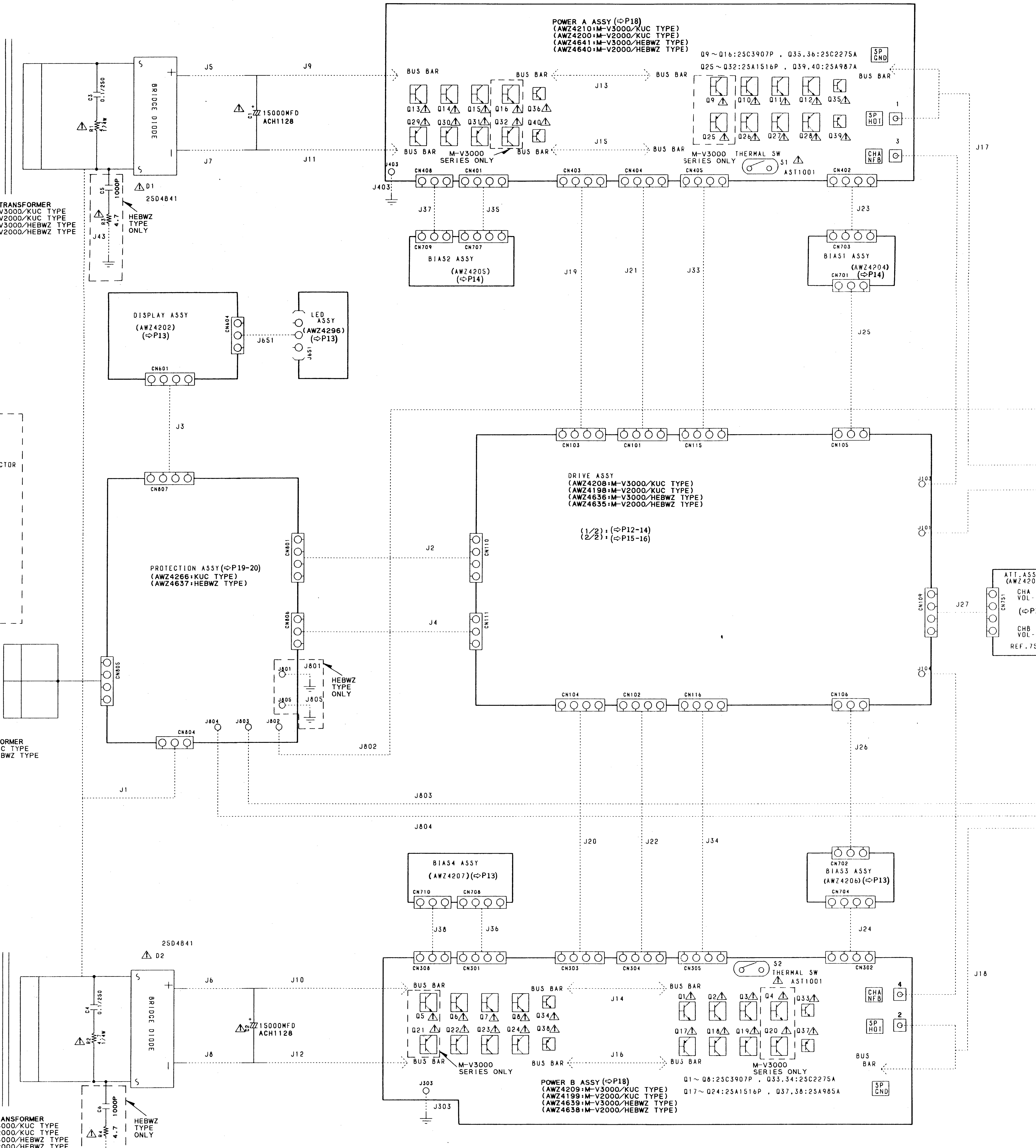
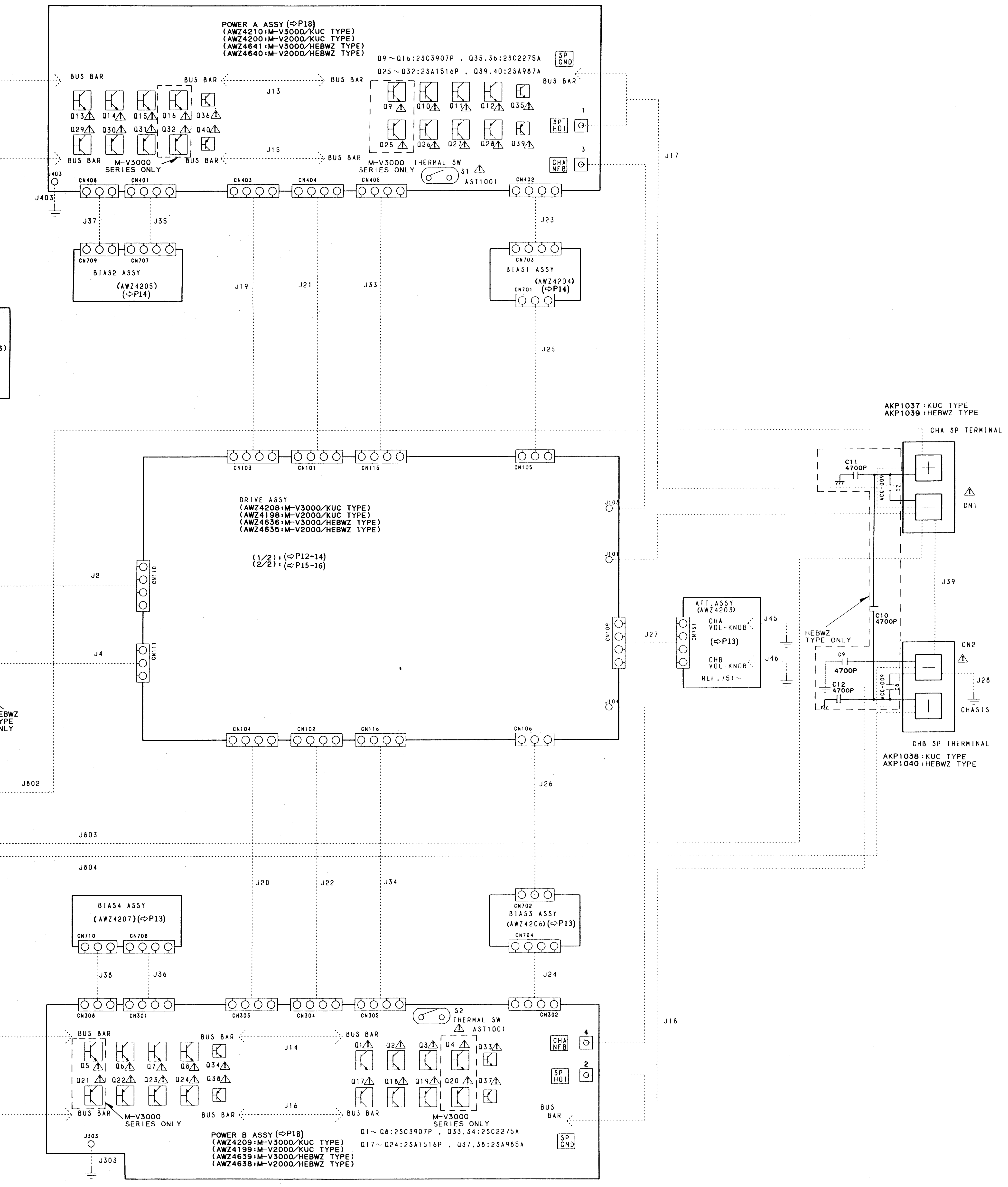

POWER A ASSY (⇨P18)
(AWZ4210:M-V3000/KUC TYPE)
(AWZ4200:M-V2000/KUC TYPE)
(AWZ4641:M-V3000/HEBWZ TYPE)
(AWZ4640:M-V2000/HEBWZ TYPE)
Q9～Q16:2SC3907P , Q35,36:2SC2275A
Q25～Q32:2SA1516P , Q39,40:2SA987A
BUS BAR
M-V3000 SERIES ONLY
THERMAL SW S1 AST1001
SP GND
SP HOT
CHA NFB
BRIDGE DIODE
15000MFD ACH1128
D1 2SD4B41
D2 2SD4B41
HEBWZ TYPE ONLY
TRANSFORMER
V3000/KUC TYPE
V2000/KUC TYPE
V3000/HEBWZ TYPE
V2000/HEBWZ TYPE
BIAS2 ASSY (AWZ4205) (⇨P14)
BIAS1 ASSY (AWZ4204) (⇨P14)
DISPLAY ASSY (AWZ4202) (⇨P13)
LED ASSY (AWZ4296) (⇨P13)
DRIVE ASSY
(AWZ4208:M-V3000/KUC TYPE)
(AWZ4198:M-V2000/KUC TYPE)
(AWZ4636:M-V3000/HEBWZ TYPE)
(AWZ4635:M-V2000/HEBWZ TYPE)
(1/2):(⇨P12-14)
(2/2):(⇨P15-16)
PROTECTION ASSY(⇨P19-20)
(AWZ4266:KUC TYPE)
(AWZ4637:HEBWZ TYPE)
ATT.ASS (AWZ420
CHA VOL-
CHB VOL-
REF.75
BIAS4 ASSY (AWZ4207)(⇨P13)
BIAS3 ASSY (AWZ4206)(⇨P13)
POWER B ASSY (⇨P18)
(AWZ4209:M-V3000/KUC TYPE)
(AWZ4199:M-V2000/KUC TYPE)
(AWZ4639:M-V3000/HEBWZ TYPE)
(AWZ4638:M-V2000/HEBWZ TYPE)
Q1～Q8:2SC3907P , Q33,34:2SC2275A
Q17～Q24:2SA1516P , Q37,38:2SA985A
THERMAL SW S2 AST1001
SP HOT
SP GND
CHA NFB
ORMER
C TYPE
BWZ TYPE
CTOR
ANSFORMER
000/KUC TYPE
000/KUC TYPE
000/HEBWZ TYPE
000/HEBWZ TYPE

SAFETY RELATED COMPONENT WARNING

The ⚠ mark found on some component parts indicates the importance of the safty factor of the part. Thereforce,when replacing be sure to use of indential designation.

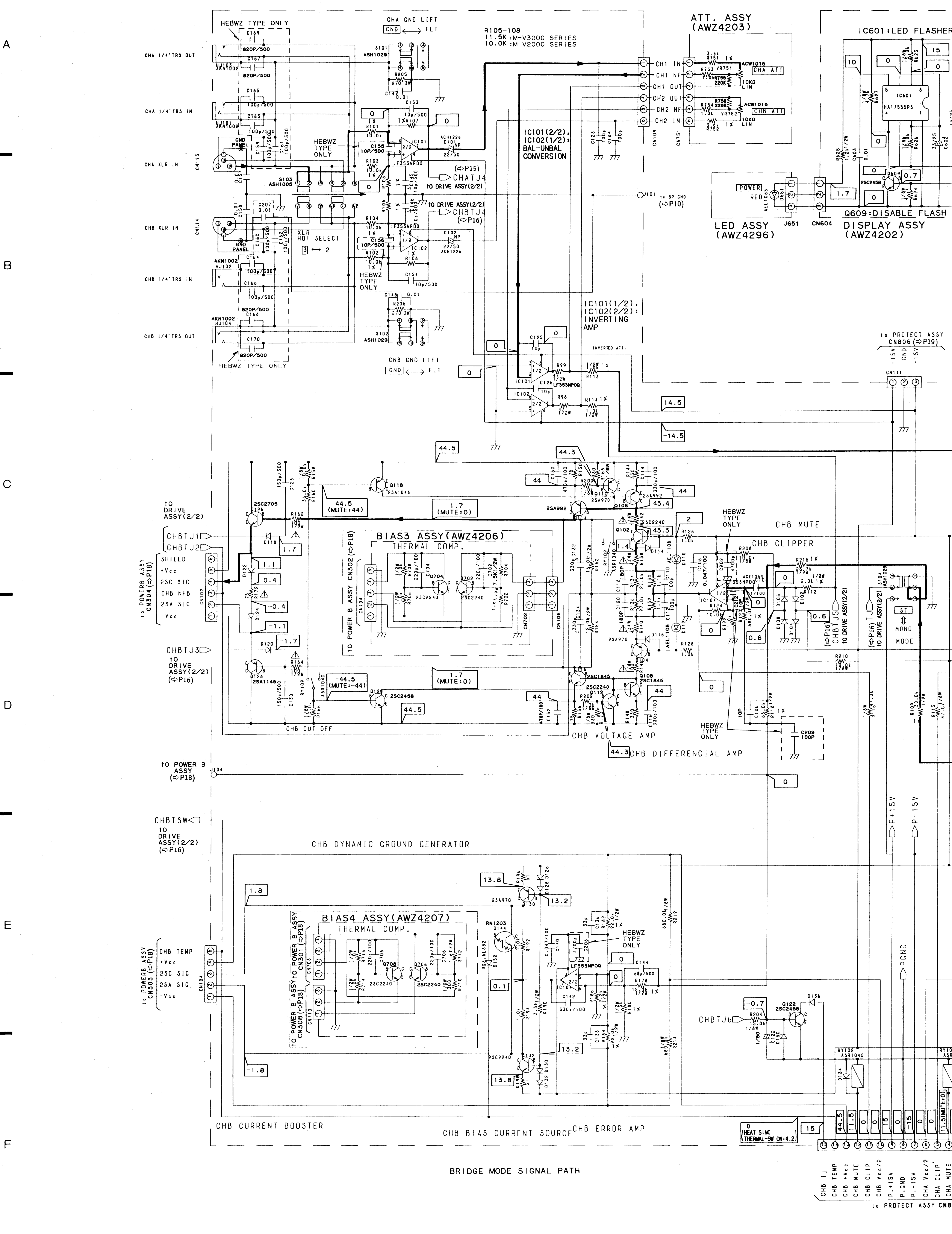

POWER A ASSY (⇨P18)
(AWZ4210:M-V3000/KUC TYPE)
(AWZ4200:M-V2000/KUC TYPE)
(AWZ4641:M-V3000/HEBWZ TYPE)
(AWZ4640:M-V2000/HEBWZ TYPE)
Q9～Q16:2SC3907P , Q35,36:2SC2275A
Q25～Q32:2SA1516P , Q39,40:2SA987A
SP GND
BUS BAR
J13
J15
Q13 Q14 Q15 Q16 Q36
Q29 Q30 Q31 Q32 Q40
Q9 Q10 Q11 Q12 Q35
Q25 Q26 Q27 Q28 Q39
SP HOT
CHA NFB
1
3
M-V3000 SERIES ONLY
THERMAL SW S1 AST1001
J403
CN408 CN401 CN403 CN404 CN405 CN402
J37 J35 J23 J17
CN709 CN707
BIAS2 ASSY (AWZ4205) (⇨P14)
CN703
BIAS1 ASSY (AWZ4204) (⇨P14)
CN701
J19 J21 J33 J25
AKP1037 :KUC TYPE
AKP1039 :HEBWZ TYPE
CHA SP TERMINAL
C11 4700P
C7
ACC-009
CN1
CN103 CN101 CN115 CN105
DRIVE ASSY
(AWZ4208:M-V3000/KUC TYPE)
(AWZ4198:M-V2000/KUC TYPE)
(AWZ4636:M-V3000/HEBWZ TYPE)
(AWZ4635:M-V2000/HEBWZ TYPE)
(1/2):(⇨P12-14)
(2/2):(⇨P15-16)
J103
J101
J2 CN110
J4 CN111
CN109
J27
ATT.ASSY (AWZ4203)
CN751
CHA VOL-KNOB
(⇨P13)
CHB VOL-KNOB
REF.751～
J45 J46
J39
C10 4700P
HEBWZ TYPE ONLY
C9 4700P
C12 4700P
C8
CN2
J28
CHASIS
CHB SP THERMINAL
AKP1038 :KUC TYPE
AKP1040 :HEBWZ TYPE
J104
CN104 CN102 CN116 CN106
J802
J26
J803
J804
J20 J22 J34
BIAS4 ASSY (AWZ4207)(⇨P13)
CN710 CN708
CN702
BIAS3 ASSY (AWZ4206)(⇨P13)
CN704
J38 J36 J24 J18
CN308 CN301 CN303 CN304 CN305 CN302
S2 THERMAL SW AST1001
BUS BAR
J14
J16
Q5 Q6 Q7 Q8 Q34
Q21 Q22 Q23 Q24 Q38
Q1 Q2 Q3 Q4 Q33
Q17 Q18 Q19 Q20 Q37
CHA NFB
SP HOT
4
2
M-V3000 SERIES ONLY
J303
POWER B ASSY (⇨P18)
(AWZ4209:M-V3000/KUC TYPE)
(AWZ4199:M-V2000/KUC TYPE)
(AWZ4639:M-V3000/HEBWZ TYPE)
(AWZ4638:M-V2000/HEBWZ TYPE)
Q1～Q8:2SC3907P , Q33,34:2SC2275A
Q17～Q24:2SA1516P , Q37,38:2SA985A
SP GND
EBWZ YPE NLY

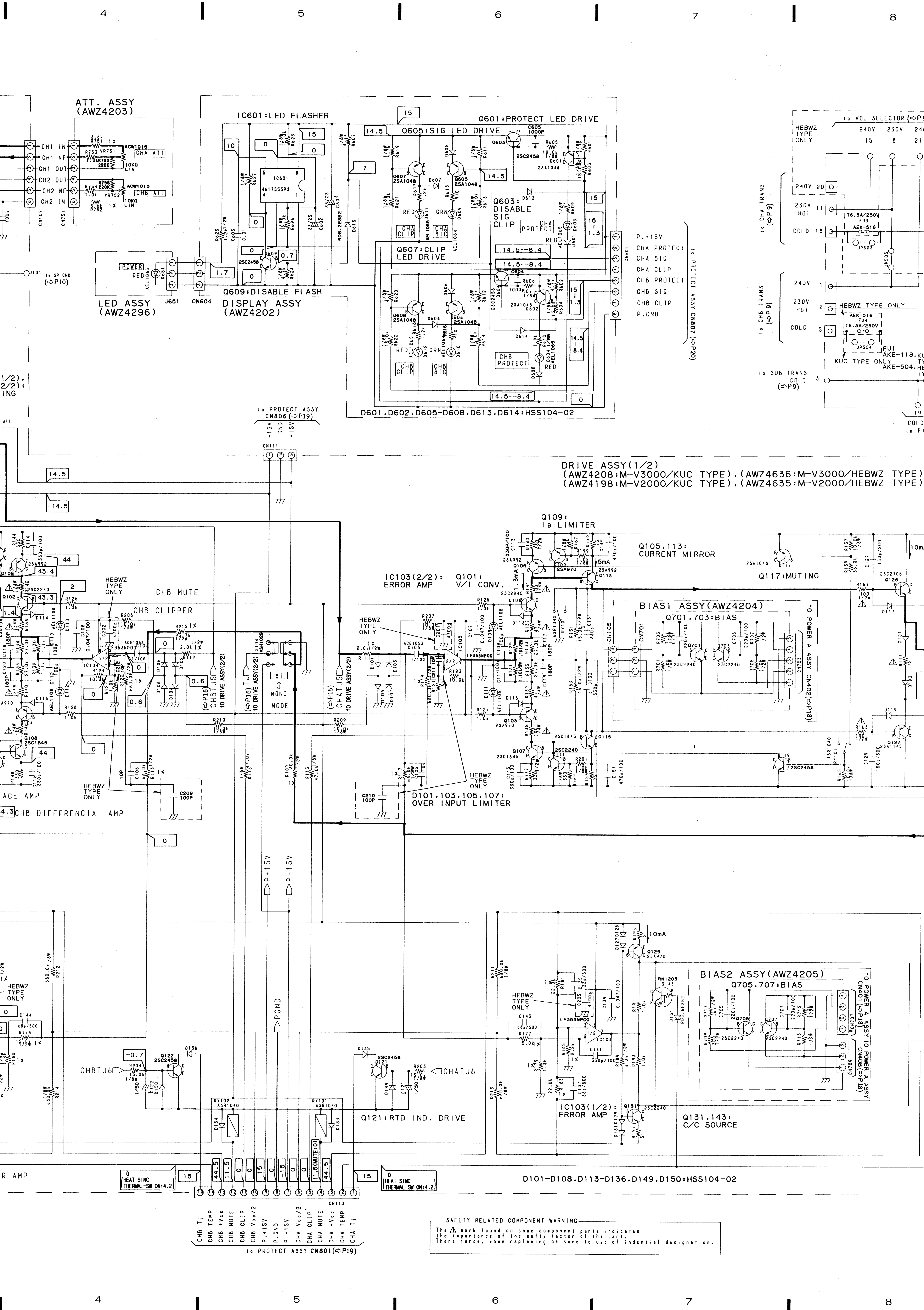
Y RELATED COMPONENT WARNING

und on some component parts indicates
e of the safty factor of the part.
en replacing be sure to use of indential designation.

A B C D E F

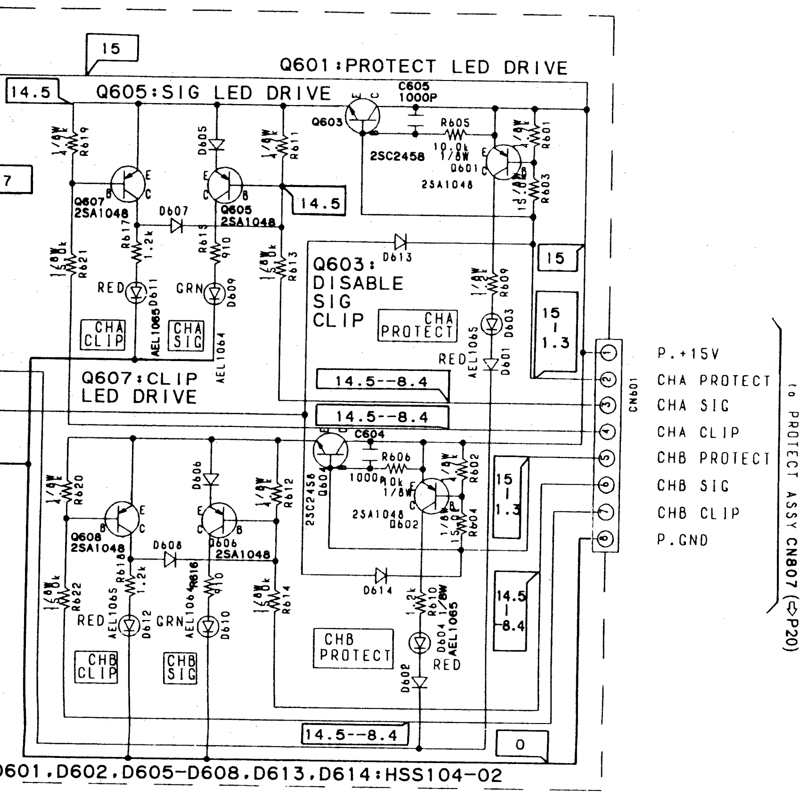
3.2 DRIVE(1/2), PRIMARY, DISPLAY, ATT, BIAS 1, BIAS 2, BIAS 3, BIAS 4 and LED ASSEMBLIES

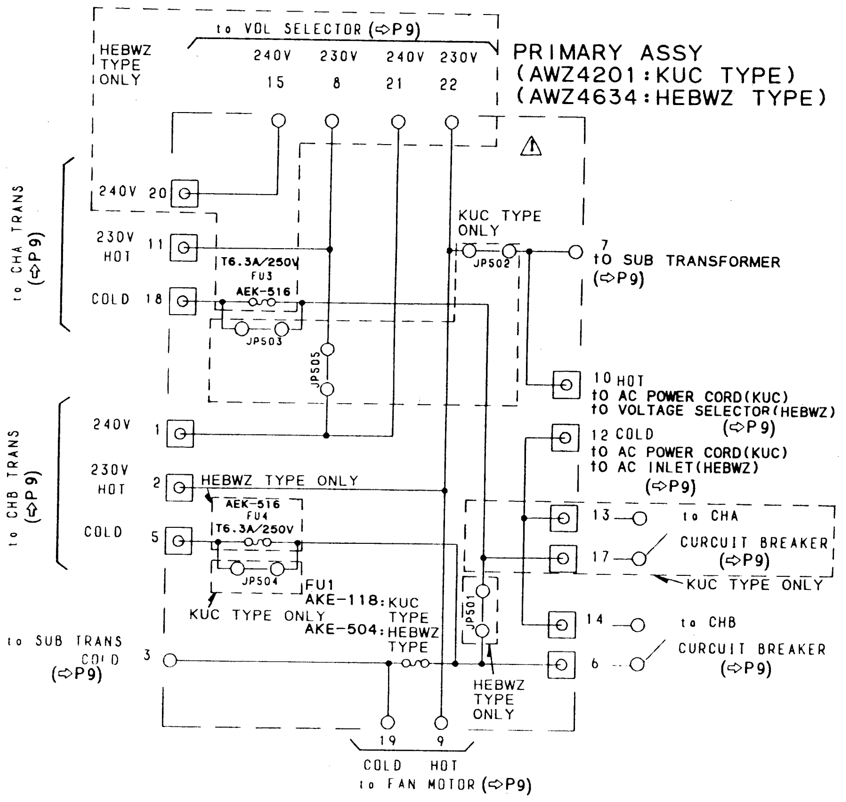

HEBWZ TYPE ONLY
CHA 1/4"TRS OUT
CHA 1/4"TRS IN
CHA XLR IN
CHB XLR IN
CHB 1/4"TRS IN
CHB 1/4"TRS OUT
CHA GND LIFT
GND ⟷ FLT
CNB GND LIFT
R105-108
11.5K :M-V3000 SERIES
10.0K :M-V2000 SERIES
XLR HOT SELECT
3 ⟷ 2
to DRIVE ASSY(2/2)
CHATJ4
CHBTJ4
IC101(2/2), IC102(1/2): BAL-UNBAL CONVERSION
IC101(1/2), IC102(2/2): INVERTING AMP
INVERTED ATT.
ATT. ASSY (AWZ4203)
CH1 IN
CH1 NF
CH1 OUT
CH2 OUT
CH2 NF
CH2 IN
CHA ATT
CHB ATT
IC601:LED FLASHER
HA17555PS
POWER
RED
LED ASSY (AWZ4296)
J651
CN604
Q609:DISABLE FLASH
DISPLAY ASSY (AWZ4202)
to PROTECT ASSY CN806 (⇨P19)
-15V
GND
+15V
14.5
-14.5
44.5
44.3
44
43.4
43.3
1.7 (MUTE:0)
44.5 (MUTE:44)
-44.5 (MUTE:-44)
to DRIVE ASSY(2/2)
CHBTJ1
CHBTJ2
CHBTJ3
SHIELD
+Vcc
2SC SIG
CHB NFB
2SA SIG
-Vcc
to POWER B ASSY CN304 (⇨P18)
BIAS3 ASSY(AWZ4206)
THERMAL COMP.
to POWER B ASSY CN302 (⇨P18)
CHB CUT OFF
CHB VOLTAGE AMP
CHB DIFFERENCIAL AMP
CHB MUTE
CHB CLIPPER
HEBWZ TYPE ONLY
CHBTJ5
ST ⇕ MONO MODE
to POWER B ASSY (⇨P18)
J104
CHBTSW
to DRIVE ASSY(2/2) (⇨P16)
CHB DYNAMIC GROUND GENERATOR
BIAS4 ASSY(AWZ4207)
THERMAL COMP.
to POWER B ASSY CN301 (⇨P18)
to POWER B ASSY CN308 (⇨P18)
CHB TEMP
+Vcc
2SC SIG
2SA SIG
-Vcc
to POWERB ASSY CN303 (⇨P18)
13.8
13.2
1.8
-1.8
0.1
CHBTJ6
-0.7
P+15V
P-15V
PGND
CHB CURRENT BOOSTER
CHB BIAS CURRENT SOURCE
CHB ERROR AMP
0 HEAT SINC THERMAL-SW ON:4.2
BRIDGE MODE SIGNAL PATH
CHB Tj
CHB +Vcc
CHB MUTE
CHB CLIP
CHB Vcc/2
P.+15V
P.GND
P.-15V
CHA Vcc/2
CHA CLIP
CHA MUTE
to PROTECT ASSY CN8
1
2
3
4
5
A
B
C
D
E
F

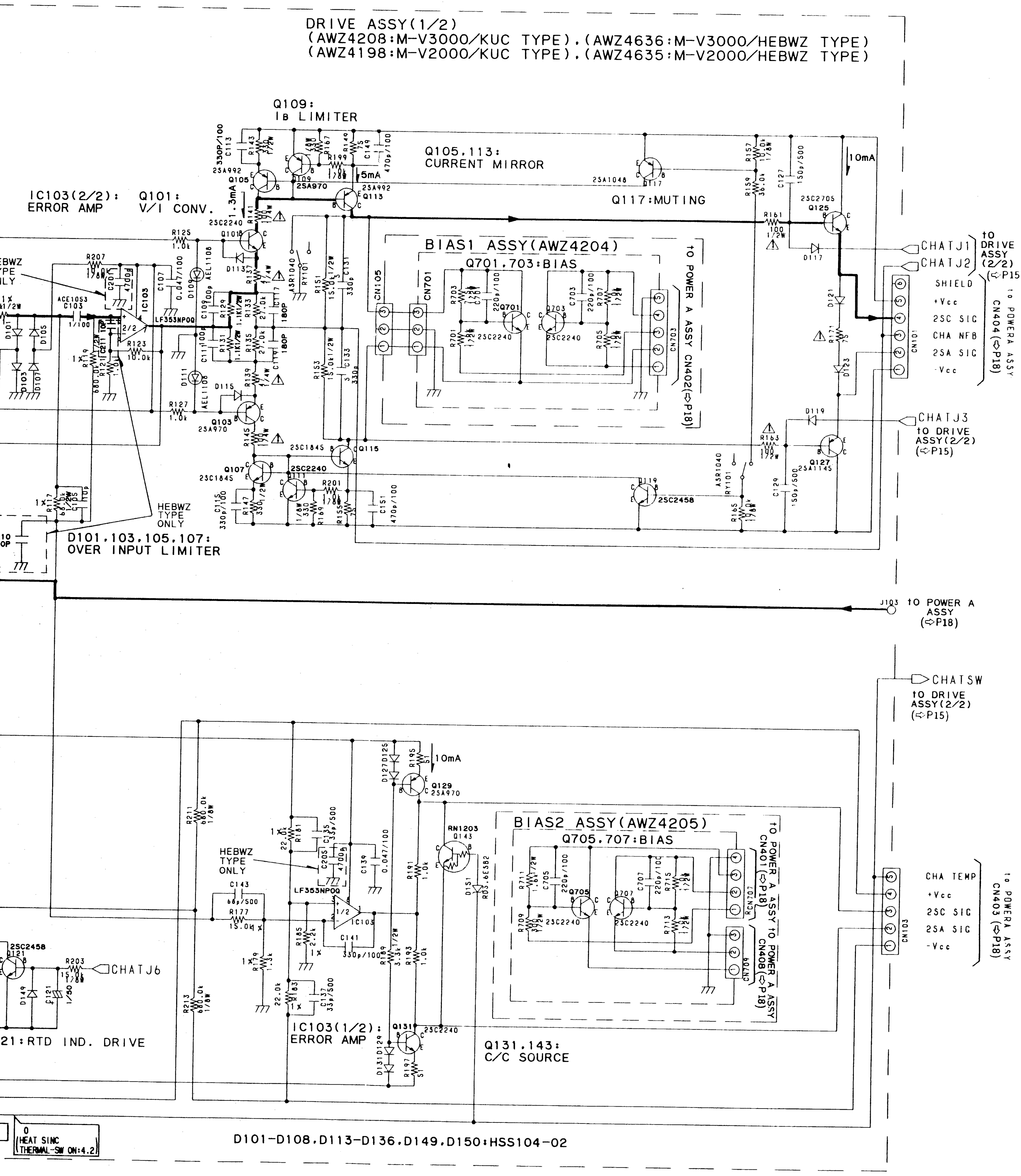

4
5
6
7
8
ATT. ASSY (AWZ4203)
CHA ATT
CHB ATT
IC601:LED FLASHER
HA17555PS
Q601:PROTECT LED DRIVE
Q605:SIG LED DRIVE
Q603: DISABLE SIG CLIP
Q607:CLIP LED DRIVE
Q609:DISABLE FLASH
CHA CLIP
CHA SIG
CHA PROTECT
CHB CLIP
CHB SIG
CHB PROTECT
POWER
LED ASSY (AWZ4296)
J651
CN604
DISPLAY ASSY (AWZ4202)
D601.D602.D605-D608.D613.D614:HSS104-02
P.+15V
CHA PROTECT
CHA SIG
CHA CLIP
CHB PROTECT
CHB SIG
CHB CLIP
P.GND
to PROTECT ASSY CN807(⇨P20)
to PROTECT ASSY CN806(⇨P19)
to SP GND (⇨P10)
HEBWZ TYPE ONLY
to VOL SELECTOR (⇨P9)
to CHA TRANS (⇨P9)
to CHB TRANS (⇨P9)
to SUB TRANS (⇨P9)
240V
230V HOT
COLD
T6.3A/250V
AEK-516
FU1 AKE-118:KUC TYPE ONLY
AKE-504:HEBWZ TYPE
DRIVE ASSY(1/2)
(AWZ4208:M-V3000/KUC TYPE),(AWZ4636:M-V3000/HEBWZ TYPE)
(AWZ4198:M-V2000/KUC TYPE),(AWZ4635:M-V2000/HEBWZ TYPE)
Q109: IB LIMITER
Q105.113: CURRENT MIRROR
Q117:MUTING
IC103(2/2): ERROR AMP
Q101: V/I CONV.
BIAS1 ASSY(AWZ4204)
Q701.703:BIAS
to POWER A ASSY CN402(⇨P18)
CHB MUTE
CHB CLIPPER
ST ⇕ MONO MODE
to DRIVE ASSY(2/2)
D101.103.105.107: OVER INPUT LIMITER
CHB DIFFERENCIAL AMP
P+15V
P-15V
PGND
CHBTJ6
CHATJ6
Q121:RTD IND. DRIVE
RY101 ASR1040
RY102 ASR1040
BIAS2 ASSY(AWZ4205)
Q705.707:BIAS
to POWER A ASSY CN401(⇨P18)
to POWER A ASSY CN408(⇨P18)
IC103(1/2): ERROR AMP
Q131.143: C/C SOURCE
LF353NPOQ
0 HEAT SINC THERMAL-SW ON:4.2
D101-D108.D113-D136.D149.D150:HSS104-02
CN110
CHB Tj
CHB TEMP
CHB +Vcc
CHB MUTE
CHB CLIP
CHB Vcc/2
P.+15V
P.GND
P.-15V
CHA Vcc/2
CHA CLIP
CHA MUTE
CHA +Vcc
CHA TEMP
CHA Tj
to PROTECT ASSY CN801(⇨P19)

SAFETY RELATED COMPONENT WARNING

The ⚠ mark found on some component parts indicates
the importance of the safty factor of the part.
There force, when replacing be sure to use of indential designation.


Q601:PROTECT LED DRIVE
Q605:SIG LED DRIVE
Q603:DISABLE SIG CLIP
Q607:CLIP LED DRIVE
CHA CLIP
CHA SIG
CHA PROTECT
CHB CLIP
CHB SIG
CHB PROTECT
RED
GRN
2SA1048
2SC2458
14.5
14.5--8.4
15
CN601
P.+15V
CHA PROTECT
CHA SIG
CHA CLIP
CHB PROTECT
CHB SIG
CHB CLIP
P.GND
to PROTECT ASSY CN807 (⇨P20)
D601,D602,D605-D608,D613,D614:HSS104-02

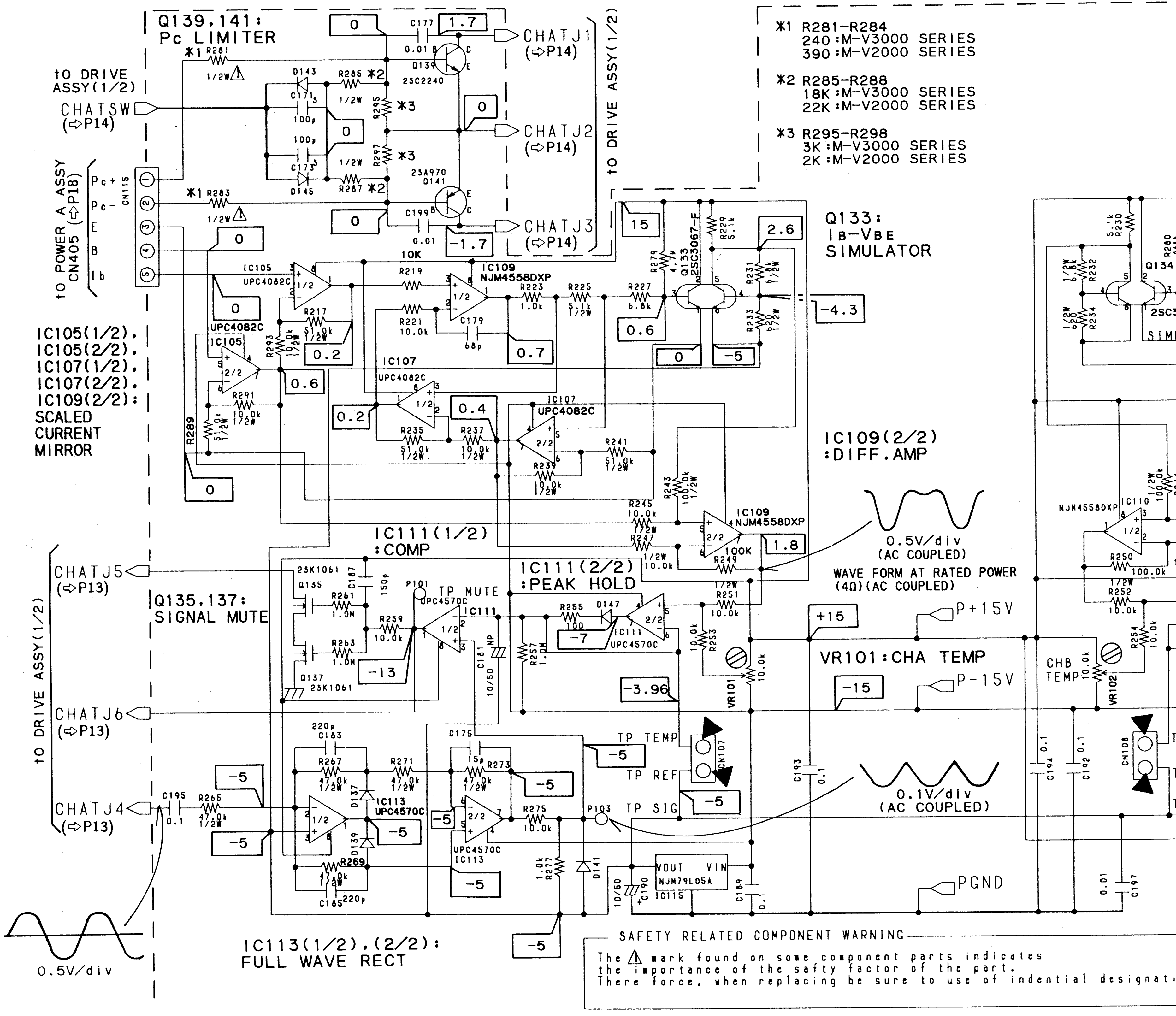

PRIMARY ASSY
(AWZ4201:KUC TYPE)
(AWZ4634:HEBWZ TYPE)
to VOL SELECTOR (⇨P9)
HEBWZ TYPE ONLY
240V 230V 240V 230V
15 8 21 22
to CHA TRANS (⇨P9)
to CHB TRANS (⇨P9)
240V 20
230V HOT 11
COLD 18
240V 1
230V HOT 2
COLD 5
T6.3A/250V FU3
AEK-516
JP503
JP505
KUC TYPE ONLY
JP502
7 to SUB TRANSFORMER (⇨P9)
10 HOT to AC POWER CORD(KUC) to VOLTAGE SELECTOR(HEBWZ) (⇨P9)
12 COLD to AC POWER CORD(KUC) to AC INLET(HEBWZ) (⇨P9)
HEBWZ TYPE ONLY
AEK-516 FU4
T6.3A/250V
JP504
FU1 AKE-118:KUC TYPE AKE-504:HEBWZ TYPE
KUC TYPE ONLY
to SUB TRANS COLD (⇨P9) 3
13 to CHA CURCUIT BREAKER (⇨P9)
17
KUC TYPE ONLY
14 to CHB CURCUIT BREAKER (⇨P9)
6
JP501
HEBWZ TYPE ONLY
19 9
COLD HOT
to FAN MOTOR (⇨P9)


DRIVE ASSY(1/2)
(AWZ4208:M-V3000/KUC TYPE),(AWZ4636:M-V3000/HEBWZ TYPE)
(AWZ4198:M-V2000/KUC TYPE),(AWZ4635:M-V2000/HEBWZ TYPE)
Q109: IB LIMITER
Q105,113: CURRENT MIRROR
Q117:MUTING
IC103(2/2): ERROR AMP
Q101: V/I CONV.
BIAS1 ASSY(AWZ4204)
Q701,703:BIAS
to POWER A ASSY CN402(⇨P18)
CHATJ1
CHATJ2
to DRIVE ASSY (2/2) (⇨P15)
SHIELD
+Vcc
2SC SIG
CHA NFB
2SA SIG
-Vcc
CN101
to POWERA ASSY CN404 (⇨P18)
CHATJ3
to DRIVE ASSY(2/2) (⇨P15)
10mA
5mA
1.3mA
HEBWZ TYPE ONLY
LF353NPOQ
D101,103,105,107: OVER INPUT LIMITER
J103 to POWER A ASSY (⇨P18)
CHATSW
to DRIVE ASSY(2/2) (⇨P15)
Q129 2SA970
RN1203 Q143
BIAS2 ASSY(AWZ4205)
Q705,707:BIAS
to POWER A ASSY CN401(⇨P18)
to POWER A ASSY CN408(⇨P18)
CHA TEMP
+Vcc
2SC SIG
2SA SIG
-Vcc
CN103
to POWERA ASSY CN403 (⇨P18)
IC103(1/2): ERROR AMP
Q131,143: C/C SOURCE
CHATJ6
21:RTD IND. DRIVE
0 HEAT SINC THERMAL-SW ON:4.2
D101-D108,D113-D136,D149,D150:HSS104-02

SAFETY RELATED COMPONENT WARNING

The ⚠ mark found on some component parts indicates the importance of the safty factor of the part. There force, when replacing be sure to use of indential designation.

3.3 DRIVE(2/2) ASSEMBLY


Q139,141:
Pc LIMITER
to DRIVE ASSY(1/2)
CHATSW
(⇨P14)
CHATJ1
(⇨P14)
CHATJ2
(⇨P14)
CHATJ3
(⇨P14)
to DRIVE ASSY(1/2)
to POWER A ASSY CN405 (⇨P18)
Pc+
Pc−
E
B
Ib
CN115
Q139
2SC2240
Q141
2SA970
Q133:
IB−VBE
SIMULATOR
Q133 2SC3067-F
IC105(1/2),
IC105(2/2),
IC107(1/2),
IC107(2/2),
IC109(2/2):
SCALED
CURRENT
MIRROR
IC105 UPC4082C
IC107 UPC4082C
IC109 NJM4558DXP
IC109(2/2)
:DIFF.AMP
IC111(1/2)
:COMP
IC111(2/2)
:PEAK HOLD
IC111 UPC4570C
TP MUTE
P101
Q135,137:
SIGNAL MUTE
Q135 2SK1061
Q137 2SK1061
CHATJ5
(⇨P13)
CHATJ6
(⇨P13)
CHATJ4
(⇨P13)
to DRIVE ASSY(1/2)
0.5V/div
(AC COUPLED)
WAVE FORM AT RATED POWER
(4Ω)(AC COUPLED)
0.1V/div
(AC COUPLED)
0.5V/div
P+15V
P−15V
PGND
VR101:CHA TEMP
CHB TEMP
VR102
TP TEMP
TP REF
TP SIG
P103
CN107
CN108
IC113 UPC4570C
IC115 NJM79L05A
VOUT VIN
IC113(1/2),(2/2):
FULL WAVE RECT
IC110 NJM4558DXP
Q134
2SC
0
1.7
0
0
−1.7
0
15
2.6
−4.3
0.6
0
−5
0.2
0.6
0.7
0.2
0.4
0
1.8
+15
−7
−13
−3.96
−15
−5
−5
−5
−5
−5
−5
−5
−5
*1 R281
*1 R283
*2 R285
*2 R287
*3 R295
*3 R297

*1 R281-R284
240 :M-V3000 SERIES
390 :M-V2000 SERIES

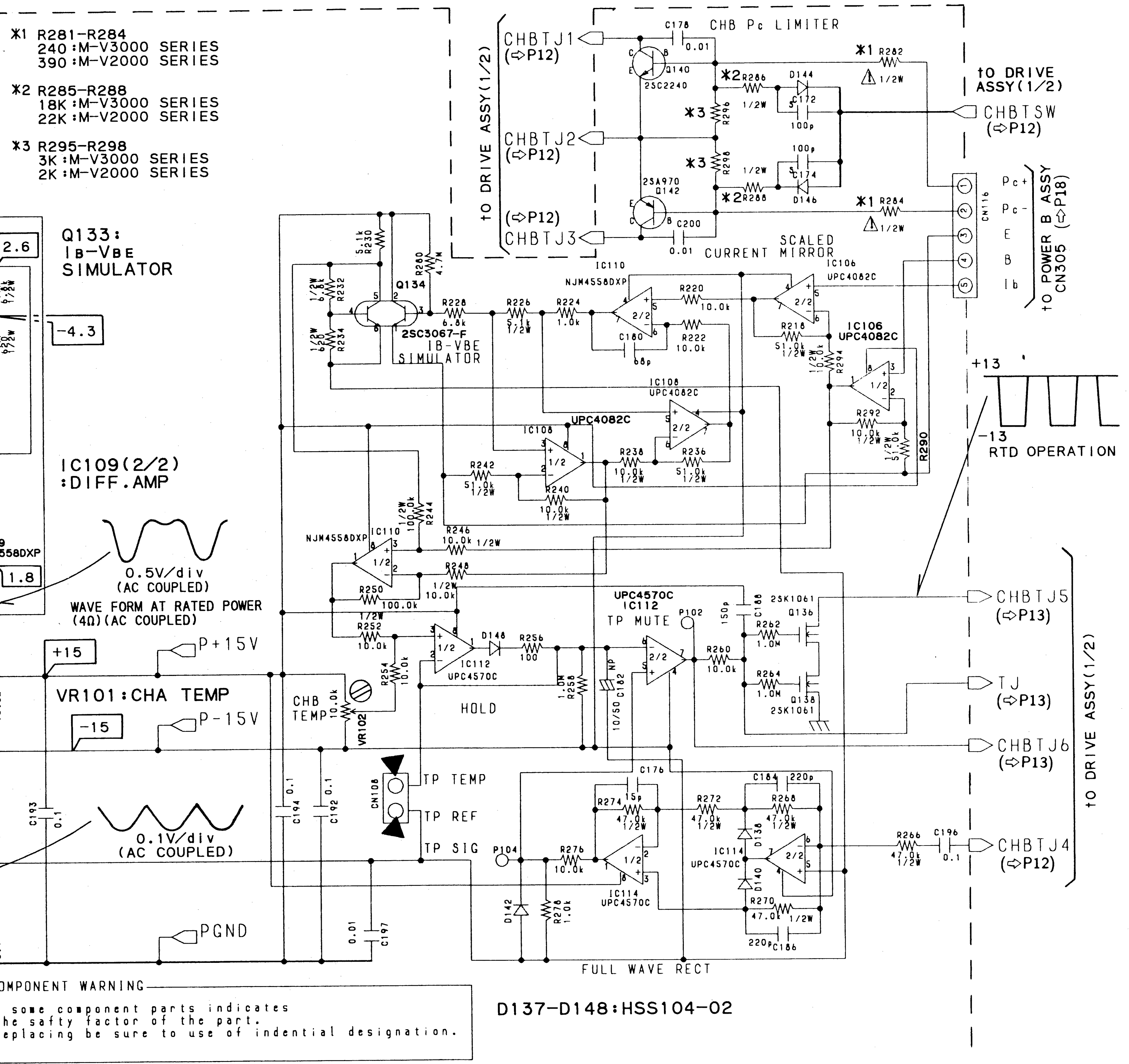
*2 R285-R288
18K :M-V3000 SERIES
22K :M-V2000 SERIES

*3 R295-R298
3K :M-V3000 SERIES
2K :M-V2000 SERIES

SAFETY RELATED COMPONENT WARNING

The ⚠ mark found on some component parts indicates the importance of the safty factor of the part.
There force, when replacing be sure to use of indential designati

DRIVE ASSY(2/2)(AWZ4208:M-V3000/KUC TYPE),(AWZ4636:M-V3000/HEBWZ TYPE)
(AWZ4198:M-V2000/KUC TYPE),(AWZ4635:M-V2000/HEBWZ TYPE)


✻1 R281–R284
240 : M–V3000 SERIES
390 : M–V2000 SERIES
✻2 R285–R288
18K : M–V3000 SERIES
22K : M–V2000 SERIES
✻3 R295–R298
3K : M–V3000 SERIES
2K : M–V2000 SERIES
Q133 : IB–VBE SIMULATOR
IC109(2/2) : DIFF.AMP
0.5V/div (AC COUPLED)
WAVE FORM AT RATED POWER (4Ω)(AC COUPLED)
0.1V/div (AC COUPLED)
P+15V
P–15V
PGND
+15
–15
2.6
–4.3
1.8
VR101 : CHA TEMP
CHB TEMP
VR102
CHBTJ1 (⇨P12)
CHBTJ2 (⇨P12)
CHBTJ3 (⇨P12)
to DRIVE ASSY(1/2)
CHB Pc LIMITER
2SC2240 Q140
2SA970 Q142
SCALED CURRENT MIRROR
to DRIVE ASSY(1/2)
CHBTSW (⇨P12)
CN116
Pc+ Pc– E B Ib
to POWER B ASSY CN305 (⇨P18)
Q134 2SC3067–F IB–VBE SIMULATOR
IC110 NJM4558DXP
IC106 UPC4082C
IC108 UPC4082C
UPC4570C IC112 TP MUTE
HOLD
IC114 UPC4570C
FULL WAVE RECT
TP TEMP
TP REF
TP SIG
CN108
P102
P104
2SK1061 Q136
2SK1061 Q138
+13
–13
RTD OPERATION
CHBTJ5 (⇨P13)
TJ (⇨P13)
CHBTJ6 (⇨P13)
CHBTJ4 (⇨P12)
to DRIVE ASSY(1/2)
D137–D148 : HSS104–02

OMPONENT WARNING

some component parts indicates
he safty factor of the part.
eplacing be sure to use of indential designation.

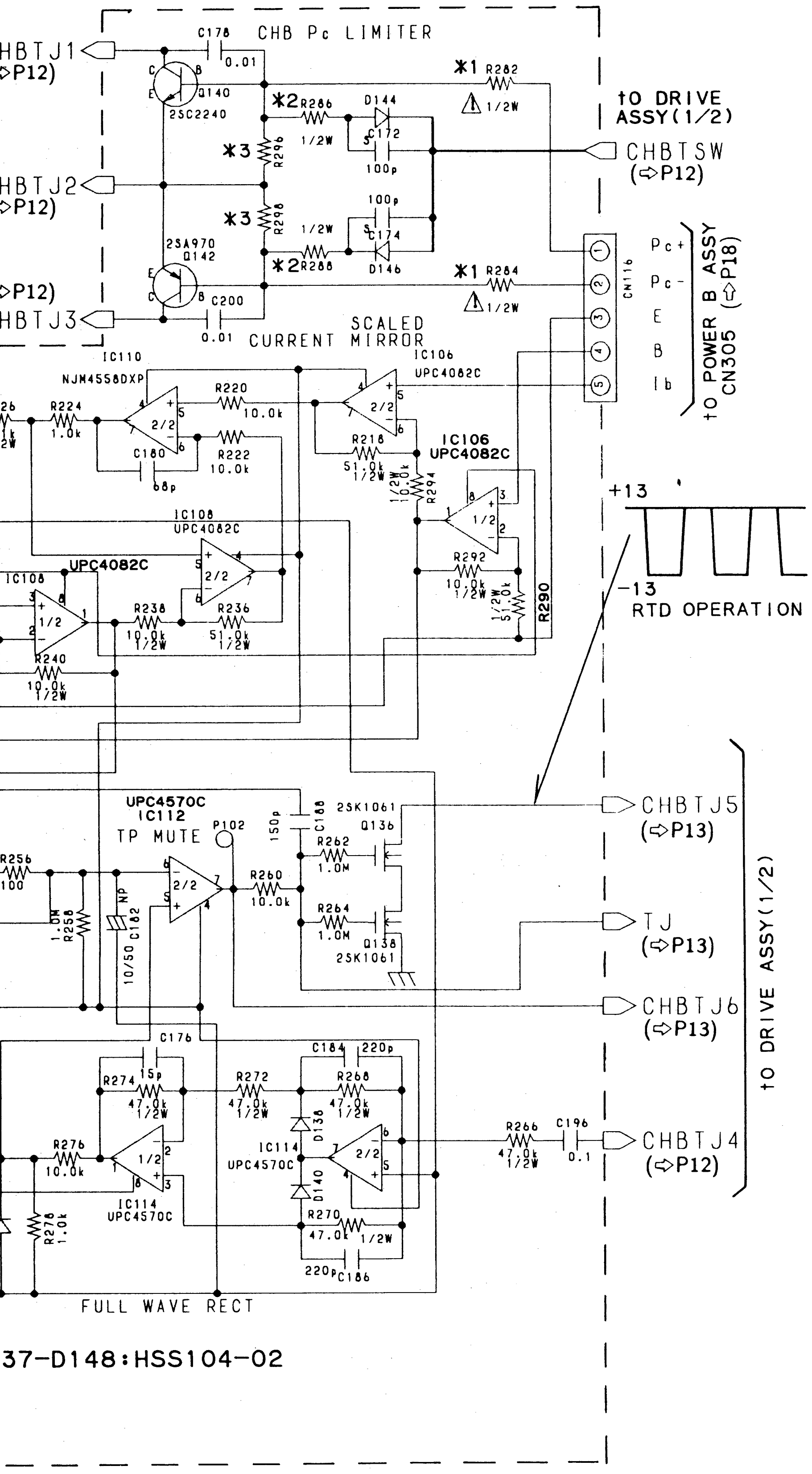
.(AWZ4636:M–V3000/HEBWZ TYPE)
.(AWZ4635:M–V2000/HEBWZ TYPE)

Note:

1. **When ordering service parts, be "PARTS LIST of EXPLODED V PARTS LIST".**
2. **Since these are basic circuits, some p values of some components may be c ment.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise
   Rated power: 1/4W, 1/6W, 1/8W, 1/1(noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, less otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unles
   Rated voltage: 50V except for electrolytic
5. **COILS:**
   Unit: m:mH or μH unless otherwise note
6. **VOLTAGE AND CURRENT:**
   V : Signal voltage at rated output.
   : DC voltage (V) at no input signal ur Value in ( ) is DC voltage at rate
   ⇦ mA or ← mA : DC current at no input s noted.
7. **OTHERS:**
   - ➡ : Signal route.
   - ⊘ : Adjusting point.
   - ▼ (Red) : Measurement point.
   - The ⚠ mark found on some component portance of the safety factor of the par placing, be sure to use parts of identic
8. **SWITCHES** (Underline indicates switch p

   S1 : THERMAL SWITCH
   S2 : THERMAL SWITCH
   S3 : CIRCUIT BREAKER

   DRIVE ASSY
   S101 : GND/FLT (CH A SIGNAL GROUND
   S102 : GND/FLT (CH B SIGNAL GROUND
   S103 : 2 HOT/3 HOT (POLARITY)
   S104 : STEREO/BRIDGE (MODE)


CHB Pc LIMITER
HBTJ1
(⇨P12)
HBTJ2
(⇨P12)
(⇨P12)
HBTJ3
C178
0.01
Q140
2SC2240
2SA970
Q142
C200
0.01
*2 R286
*2 R288
*3 R296
*3 R298
1/2W
D144
D146
C172
C174
100p
*1 R282
*1 R284
1/2W
TO DRIVE ASSY(1/2)
CHBTSW
(⇨P12)
CN116
Pc+
Pc-
E
B
Ib
TO POWER B ASSY CN305 (⇨P18)
CURRENT MIRROR
SCALED
IC110
NJM4558DXP
R224
1.0k
R220
10.0k
R222
10.0k
C180
68p
IC106
UPC4082C
R218
51.0k
1/2W
R294
R292
10.0k
1/2W
R290
IC108
UPC4082C
R238
10.0k
1/2W
R236
51.0k
1/2W
R240
10.0k
1/2W
+13
-13
RTD OPERATION
UPC4570C
IC112
TP MUTE
P102
150p
C188
2SK1061
Q136
R262
1.0M
R260
10.0k
R264
1.0M
Q138
2SK1061
R256
100
R258
1.0M
C182
10/50 NP
CHBTJ5
(⇨P13)
TJ
(⇨P13)
CHBTJ6
(⇨P13)
TO DRIVE ASSY(1/2)
C176
15p
R274
47.0k
1/2W
R272
47.0k
1/2W
C184
220p
R268
47.0k
1/2W
D138
D140
IC114
UPC4570C
R276
10.0k
R278
1.0k
R270
47.0k
1/2W
220p C186
R266
47.0k
1/2W
C196
0.1
CHBTJ4
(⇨P12)
FULL WAVE RECT
37-D148:HSS104-02

Note:

(Type 1)

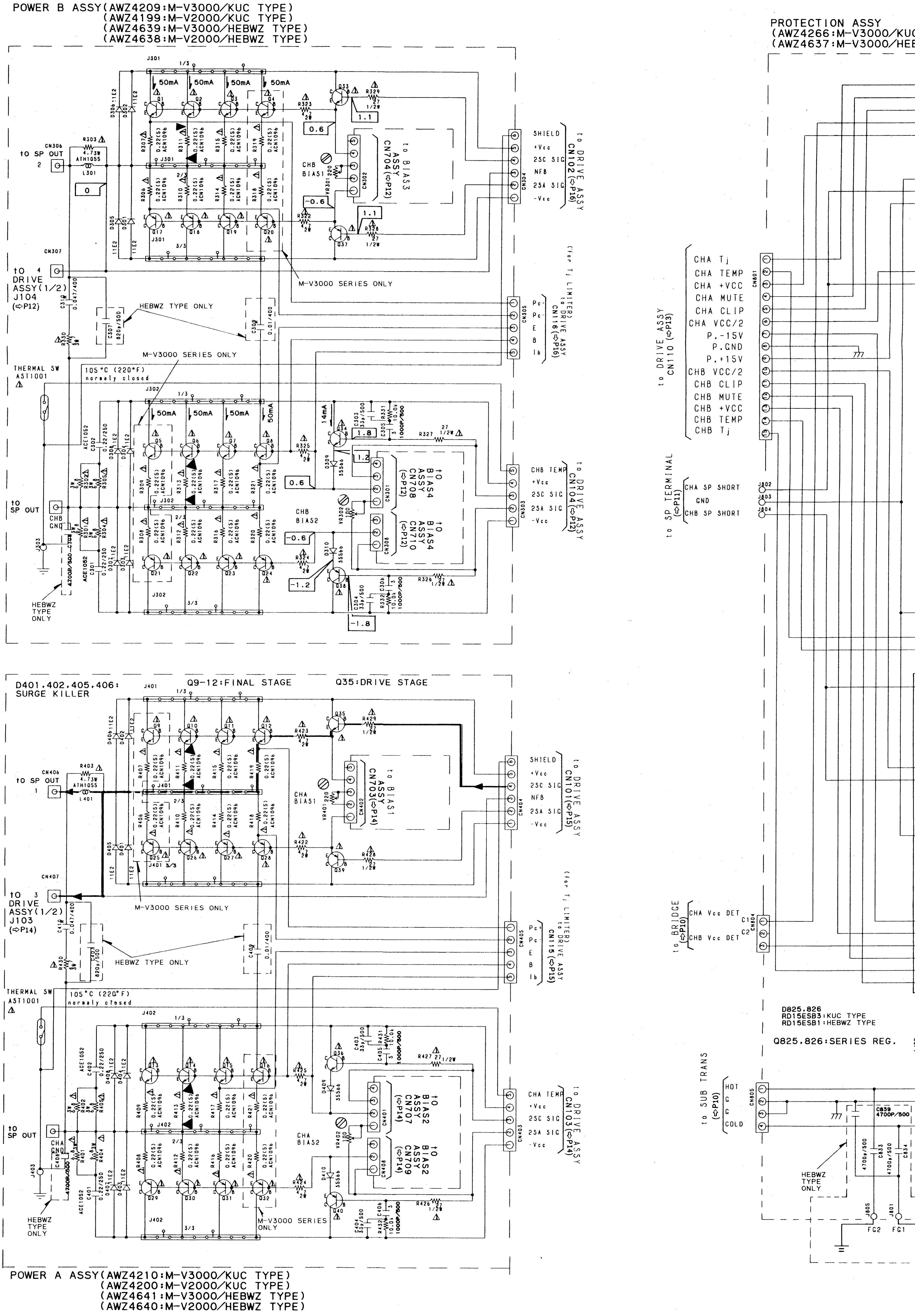
1. **When ordering service parts, be sure to refer to "PARTS LIST of EXPLODED VIEWS" or "PCB PARTS LIST".**
2. **Since these are basic circuits, some parts of them or the values of some components may be changed for improvement.**
3. **RESISTORS:**
   Unit: k:kΩ, M:MΩ, or Ω unless otherwise noted.
   Rated power: 1/4W, 1/6W, 1/8W, 1/10W unless otherwise noted.
   Tolerance: (F): ±1%, (G): ±2%, (K): ±10%, (M): ±20% or ±5% unless otherwise noted.
4. **CAPACITORS:**
   Unit: p:pF or μF unless otherwise noted.
   Ratings: capacitor (μF)/ voltage (V) unless otherwise noted.
   Rated voltage: 50V except for electrolytic capacitors.
5. **COILS:**
   Unit: m:mH or μH unless otherwise noted.
6. **VOLTAGE AND CURRENT:**
   V : Signal voltage at rated output.
   : DC voltage (V) at no input signal unless otherwise noted. Value in ( ) is DC voltage at rated power.
   ⇦ mA or ← mA : DC current at no input signal unless otherwise noted.
7. **OTHERS:**
   - ➡ : Signal route.
   - ⊘ : Adjusting point.
   - ▼ (Red) : Measurement point.
   - The ⚠ mark found on some component parts indicates the importance of the safety factor of the parts. Therefore, when replacing, be sure to use parts of identical designation.
8. **SWITCHES** (Underline indicates switch position):

S1: THERMAL SWITCH
S2: THERMAL SWITCH
S3: CIRCUIT BREAKER

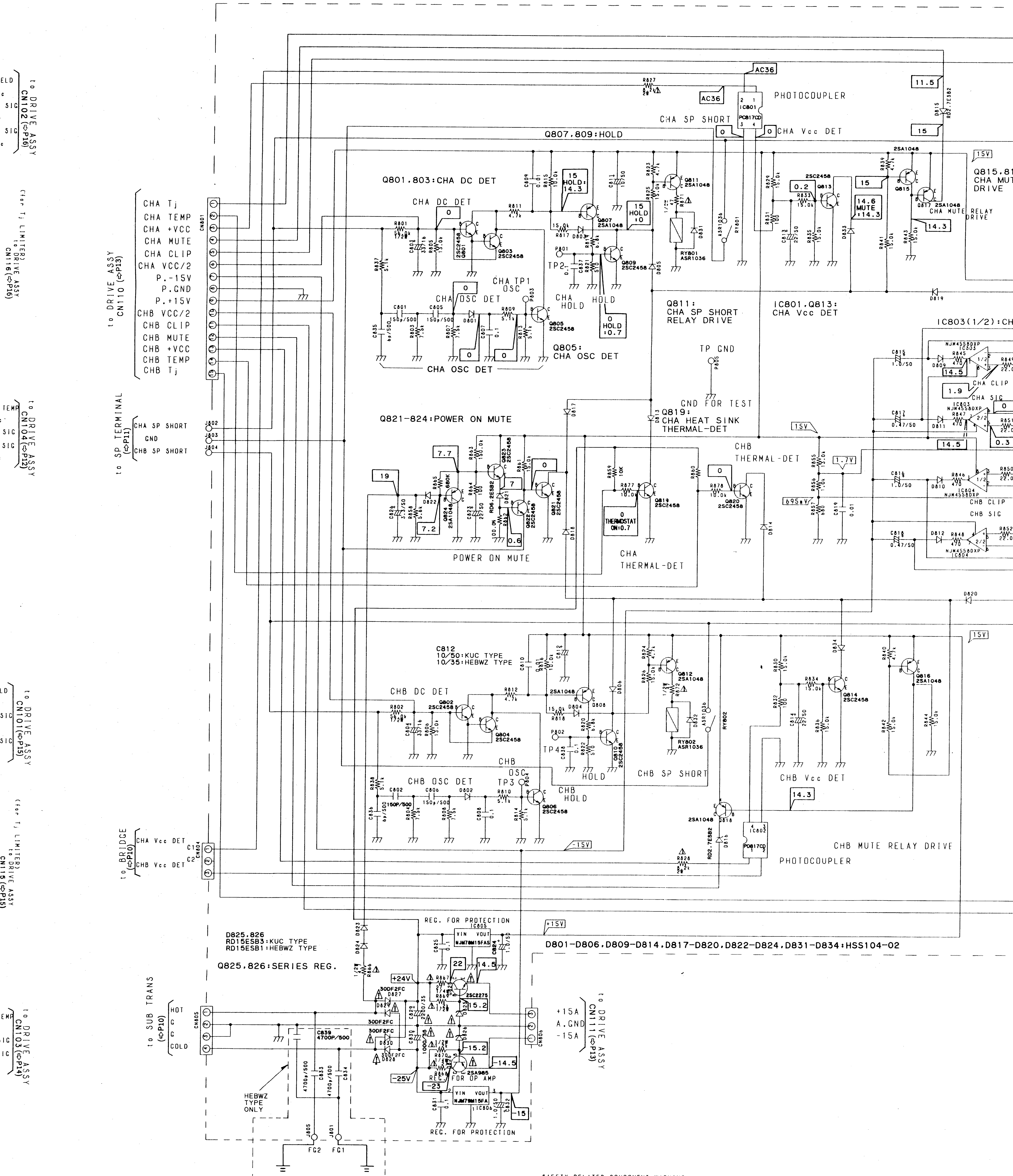
DRIVE ASSY

S101: GND/FLT (CH A SIGNAL GROUND)
S102: GND/FLT (CH B SIGNAL GROUND)
S103: 2 HOT/3 HOT (POLARITY)
S104: STEREO/BRIDGE (MODE)

3.4 PROTECTION, POWER A and POWER B ASSEMBLIES


POWER B ASSY(AWZ4209:M-V3000/KUC TYPE)
(AWZ4199:M-V2000/KUC TYPE)
(AWZ4639:M-V3000/HEBWZ TYPE)
(AWZ4638:M-V2000/HEBWZ TYPE)
A
B
C
D
E
F
J301
50mA
CN306
to SP OUT
R303
4.7 3W
ATH1055
L301
0
0.6
-0.6
1.1
CHB BIAS1
VR301
CN302
to BIAS3 ASSY CN704(⇨P12)
M-V3000 SERIES ONLY
SHIELD
+Vcc
2SC SIG
NFB
2SA SIG
-Vcc
CN304
to DRIVE ASSY CN102(⇨P16)
CN307
to 4 DRIVE ASSY(1/2) J104 (⇨P12)
HEBWZ TYPE ONLY
Pc
Pc
E
B
Ib
CN305
(for Tj LIMITER) to DRIVE ASSY CN116(⇨P16)
THERMAL SW AST1001
105°C (220°F) normaly closed
J302
14mA
1.8
1.2
-1.2
-1.8
to BIAS4 ASSY CN708(⇨P12)
to BIAS4 ASSY CN710(⇨P12)
CHB BIAS2
VR302
CN301
CN308
CHB TEMP
+Vcc
2SC SIG
2SA SIG
-Vcc
CN303
to DRIVE ASSY CN104(⇨P12)
to SP OUT
CHB GND
J303
HEBWZ TYPE ONLY
D401,402,405,406: SURGE KILLER
J401
Q9-12:FINAL STAGE
Q35:DRIVE STAGE
CN406
to SP OUT 1
R403
4.7 3W
ATH1055
L401
CHA BIAS1
VR401
CN402
to BIAS1 ASSY CN703(⇨P14)
SHIELD
+Vcc
2SC SIG
NFB
2SA SIG
-Vcc
CN404
to DRIVE ASSY CN101(⇨P15)
CN407
to 3 DRIVE ASSY(1/2) J103 (⇨P14)
M-V3000 SERIES ONLY
HEBWZ TYPE ONLY
Pc
Pc
E
B
Ib
CN405
(for Tj LIMITER) to DRIVE ASSY CN115(⇨P15)
THERMAL SW AST1001
105°C (220°F) normaly closed
J402
to BIAS2 ASSY CN707(⇨P14)
to BIAS2 ASSY CN709(⇨P14)
CHA BIAS2
VR402
CN401
CN408
CHA TEMP
+Vcc
2SC SIG
2SA SIG
-Vcc
CN403
to DRIVE ASSY CN103(⇨P14)
to SP OUT
CHA GND
J403
HEBWZ TYPE ONLY
M-V3000 SERIES ONLY
POWER A ASSY(AWZ4210:M-V3000/KUC TYPE)
(AWZ4200:M-V2000/KUC TYPE)
(AWZ4641:M-V3000/HEBWZ TYPE)
(AWZ4640:M-V2000/HEBWZ TYPE)
PROTECTION ASSY
(AWZ4266:M-V3000/KU
(AWZ4637:M-V3000/HE
to DRIVE ASSY CN110 (⇨P13)
CHA Tj
CHA TEMP
CHA +VCC
CHA MUTE
CHA CLIP
CHA VCC/2
P.-15V
P.GND
P.+15V
CHB VCC/2
CHB CLIP
CHB MUTE
CHB +VCC
CHB TEMP
CHB Tj
CN801
to SP TERMINAL (⇨P11)
CHA SP SHORT
GND
CHB SP SHORT
J802
J803
J804
to BRIDGE (⇨P10)
CHA Vcc DET
CHB Vcc DET
C1
C2
CN804
D825,826
RD15ESB3:KUC TYPE
RD15ESB1:HEBWZ TYPE
Q825,826:SERIES REG.
to SUB TRANS (⇨P10)
HOT
C
C
COLD
CN805
C839 4700P/500
HEBWZ TYPE ONLY
J805
J801
FG2
FG1

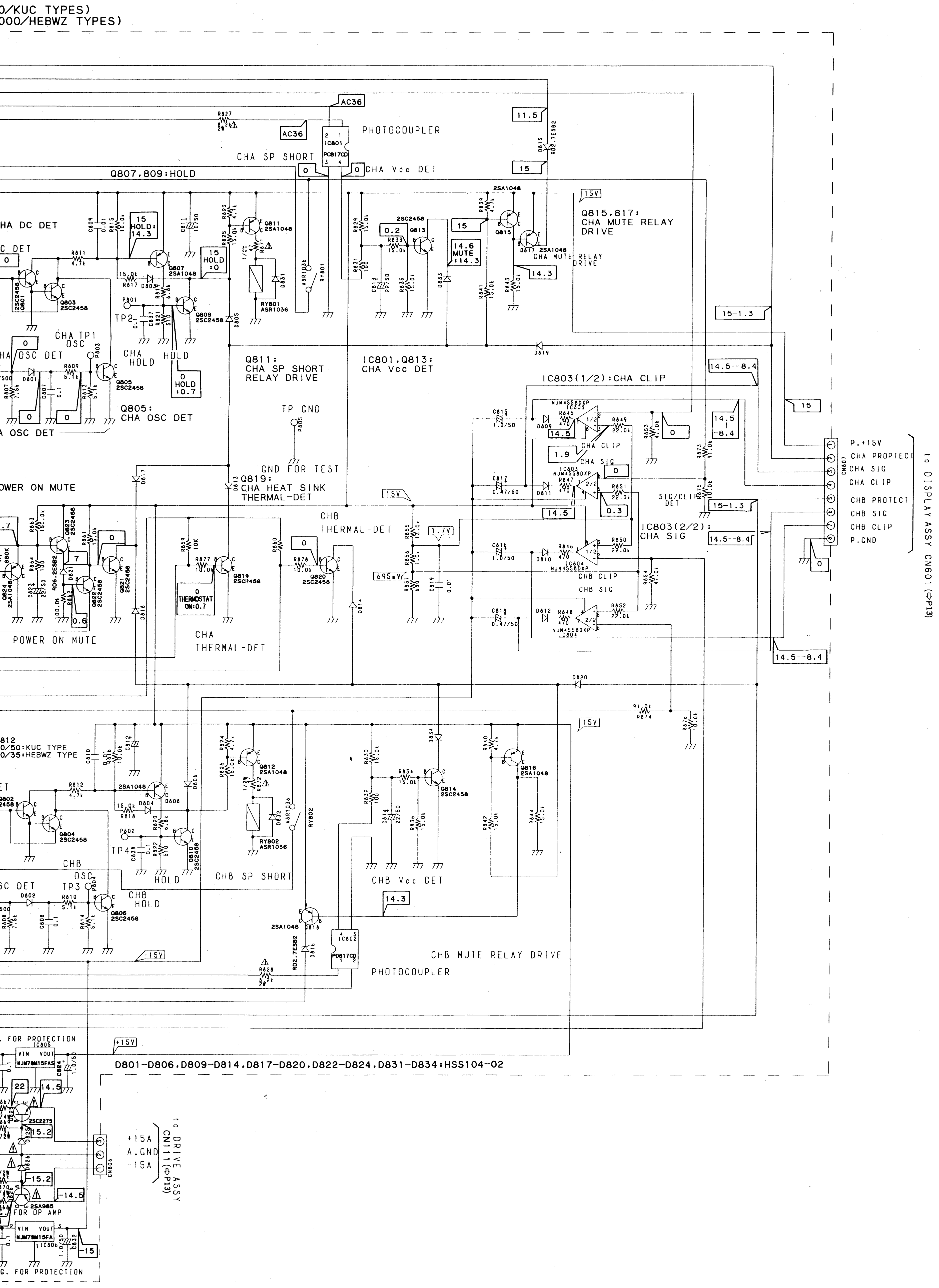
PROTECTION ASSY
(AWZ4266:M-V3000/KUC AND M-V2000/KUC TYPES)
(AWZ4637:M-V3000/HEBWZ AND M-V2000/HEBWZ TYPES)



to DRIVE ASSY CN102 (⇔P16)
(for Tj LIMITER) to DRIVE ASSY CN116 (⇔P16)
to DRIVE ASSY CN110 (⇔P13)
CHA Tj
CHA TEMP
CHA +VCC
CHA MUTE
CHA CLIP
CHA VCC/2
P.-15V
P.GND
P.+15V
CHB VCC/2
CHB CLIP
CHB MUTE
CHB +VCC
CHB TEMP
CHB Tj
CN801
to DRIVE ASSY CN104 (⇔P12)
to SP TERMINAL (⇔P11)
CHA SP SHORT
GND
CHB SP SHORT
J802
J803
J804
to DRIVE ASSY CN101 (⇔P15)
(for Tj LIMITER) to DRIVE ASSY CN115 (⇔P15)
to BRIDGE (⇔P10)
CHA Vcc DET
CHB Vcc DET
CN804
to DRIVE ASSY CN103 (⇔P14)
to SUB TRANS (⇔P10)
HOT
C
C
COLD
CN805
R827
AC36
AC36
PHOTOCOUPLER
IC801
PC817CD
CHA SP SHORT
CHA Vcc DET
Q807,809:HOLD
11.5
15
15V
2SA1048
R02.7ES82
D815
Q815,81
CHA MUT
DRIVE
Q801,803:CHA DC DET
CHA DC DET
15 HOLD:14.3
15 HOLD :0
2SC2458
0.2
15
14.6 MUTE :14.3
14.3
Q817 2SA1048
CHA MUTE RELAY DRIVE
Q811 2SA1048
RY801 ASR1036
CHA TP1
OSC
CHA OSC DET
CHA HOLD
HOLD
0 HOLD :0.7
Q805: CHA OSC DET
Q811: CHA SP SHORT RELAY DRIVE
IC801,Q813: CHA Vcc DET
D819
IC803(1/2):CH
TP GND
GND FOR TEST
Q819: CHA HEAT SINK THERMAL-DET
CHB THERMAL-DET
1.7V
695mV
NJM4558DXP
CHA CLIP
CHA SIG
CHB CLIP
CHB SIG
14.5
1.9
0.3
Q821-824:POWER ON MUTE
19
7.7
7.2
7
0
0.6
POWER ON MUTE
0 THERMOSTAT ON:0.7
CHA THERMAL-DET
D820
15V
C812
10/50:KUC TYPE
10/35:HEBWZ TYPE
CHB DC DET
Q812 2SA1048
RY802 ASR1036
Q814 2SC2458
Q816 2SA1048
CHB SP SHORT
CHB Vcc DET
CHB OSC
CHB OSC DET
TP3
TP4
CHB HOLD
HOLD
14.3
-15V
2SA1048 Q818
RD2.7ES82
IC802 PC817CD
CHB MUTE RELAY DRIVE
PHOTOCOUPLER
R828
REG. FOR PROTECTION
IC805
NJM78M15FAS
+15V
D801-D806,D809-D814,D817-D820,D822-D824,D831-D834:HSS104-02
D825,826
RD15ESB3:KUC TYPE
RD15ESB1:HEBWZ TYPE
Q825,826:SERIES REG.
+24V
22
14.5
2SC2275
15.2
30DF2FC
D827
D829
D830
D828
C839 4700P/500
-15.2
-14.5
2SA985
REG. FOR OP AMP
-25V
-23
NJM79M15FA
IC806
15
REG. FOR PROTECTION
HEBWZ TYPE ONLY
J805
J801
FG2
FG1
CN806
+15A
A.GND
-15A
to DRIVE ASSY CN111 (⇔P13)

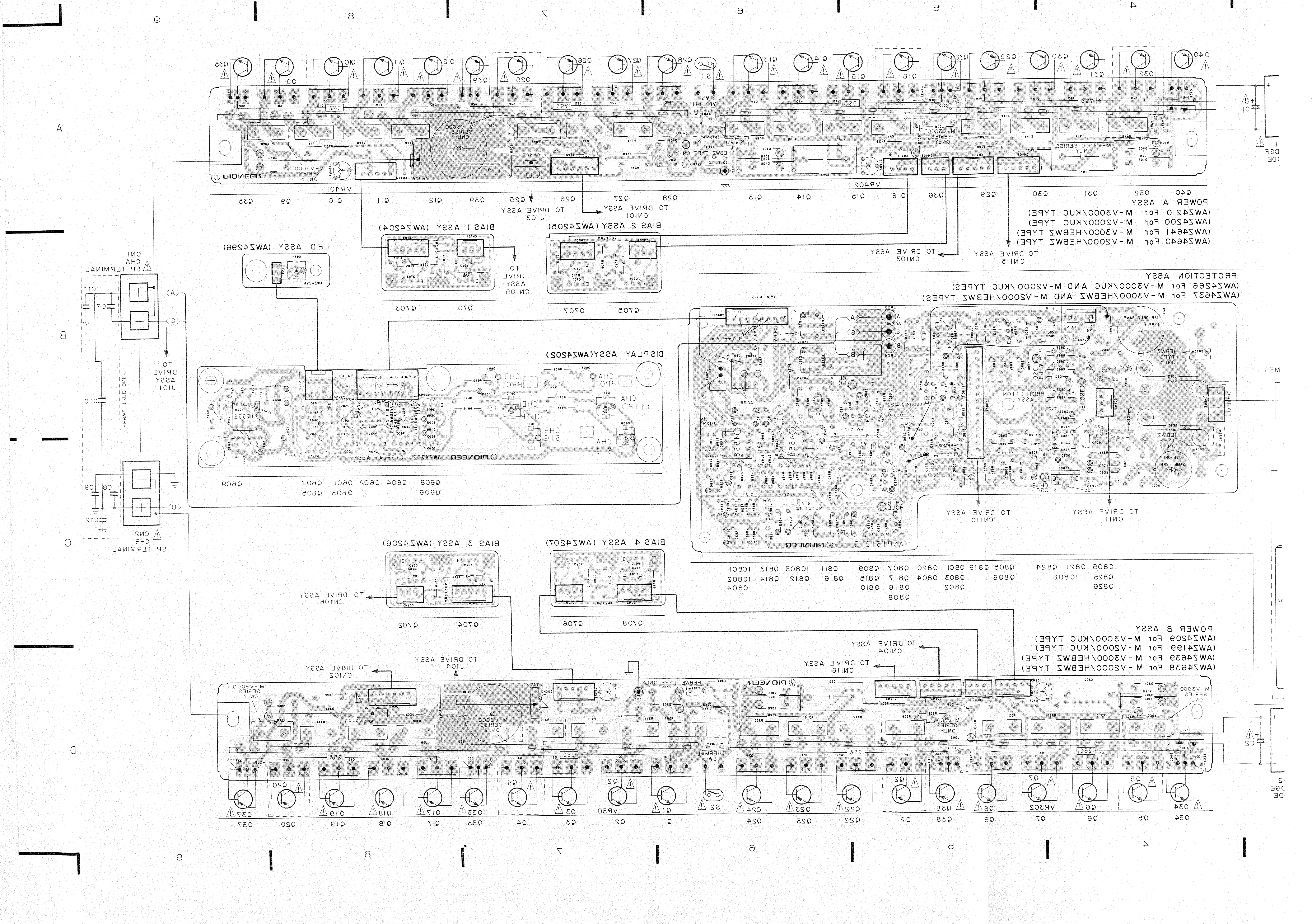
SAFETY RELATED COMPONENT WARNING

The ⚠ mark found on some component parts indicates the importance of the safty factor of the part. There force, when replacing be sure to use of indentical designation.

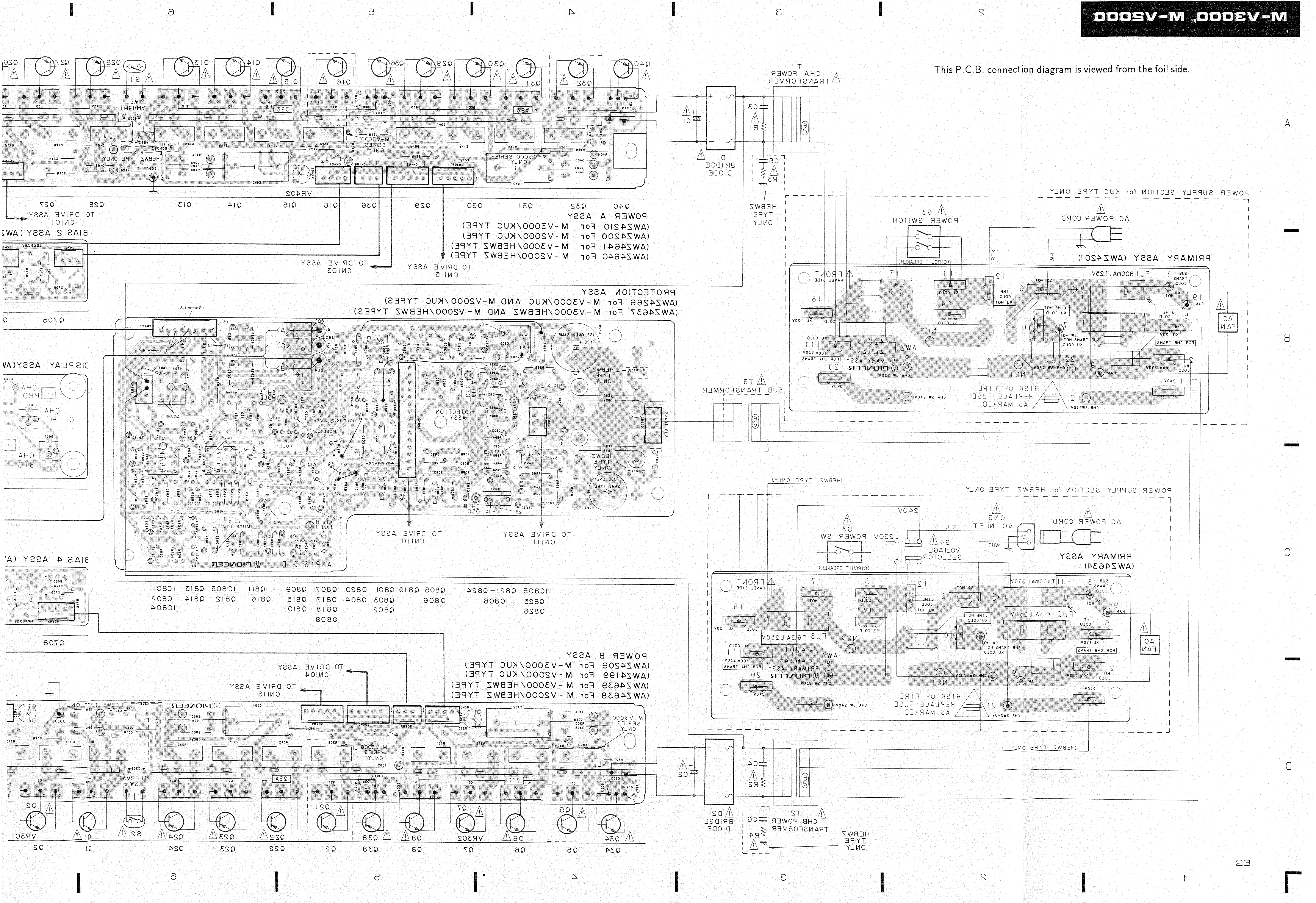

0/KUC TYPES)
000/HEBWZ TYPES)
AC36
PHOTOCOUPLER
IC801
PC817CD
CHA SP SHORT
CHA Vcc DET
11.5
15
Q807,809:HOLD
HA DC DET
C DET
15 HOLD:14.3
15 HOLD:0
Q811 2SA1048
RY801 ASR1036
2SA1048
2SC2458
0.2
15
14.6 MUTE:14.3
14.3
Q815,817: CHA MUTE RELAY DRIVE
CHA MUTE RELAY DRIVE
15-1.3
CHA TP1 OSC
HA OSC DET
CHA HOLD
HOLD
0 HOLD:0.7
Q805: CHA OSC DET
A OSC DET
Q811: CHA SP SHORT RELAY DRIVE
IC801,Q813: CHA Vcc DET
IC803(1/2):CHA CLIP
14.5--8.4
TP GND
GND FOR TEST
NJM4558DXP
14.5
1.9
CHA CLIP
CHA SIG
0
14.5 | -8.4
0.3
15
OWER ON MUTE
Q819: CHA HEAT SINK THERMAL-DET
15V
CHB THERMAL-DET
1.7V
695mV
SIG/CLIP DET
15-1.3
IC803(2/2): CHA SIG
14.5--8.4
CHB CLIP
CHB SIG
0 THERMOSTAT ON:0.7
CHA THERMAL-DET
POWER ON MUTE
0.6
P.+15V
CHA PROPTECT
CHA SIG
CHA CLIP
CHB PROTECT
CHB SIG
CHB CLIP
P.GND
CN807
to DISPLAY ASSY CN601 (⇨P13)
14.5--8.4
812
0/50:KUC TYPE
0/35:HEBWZ TYPE
Q812 2SA1048
RY802 ASR1036
Q814 2SC2458
Q816 2SA1048
CHB
CHB OSC
TP3
TP4
HOLD
CHB HOLD
CHB SP SHORT
CHB Vcc DET
14.3
2SA1048
IC802
PC817CD
CHB MUTE RELAY DRIVE
PHOTOCOUPLER
-15V
. FOR PROTECTION
IC805
NJM78M15FAS
+15V
D801-D806,D809-D814,D817-D820,D822-D824,D831-D834:HSS104-02
22
14.5
15.2
2SC2275
+15A
A.GND
-15A
CN806
to DRIVE ASSY CN111 (⇨P13)
-15.2
-14.5
2SA965
FOR OP AMP
IC806
NJM79M15FA
-15
C. FOR PROTECTION
6
7
8
9
A
B
C
D
E
F

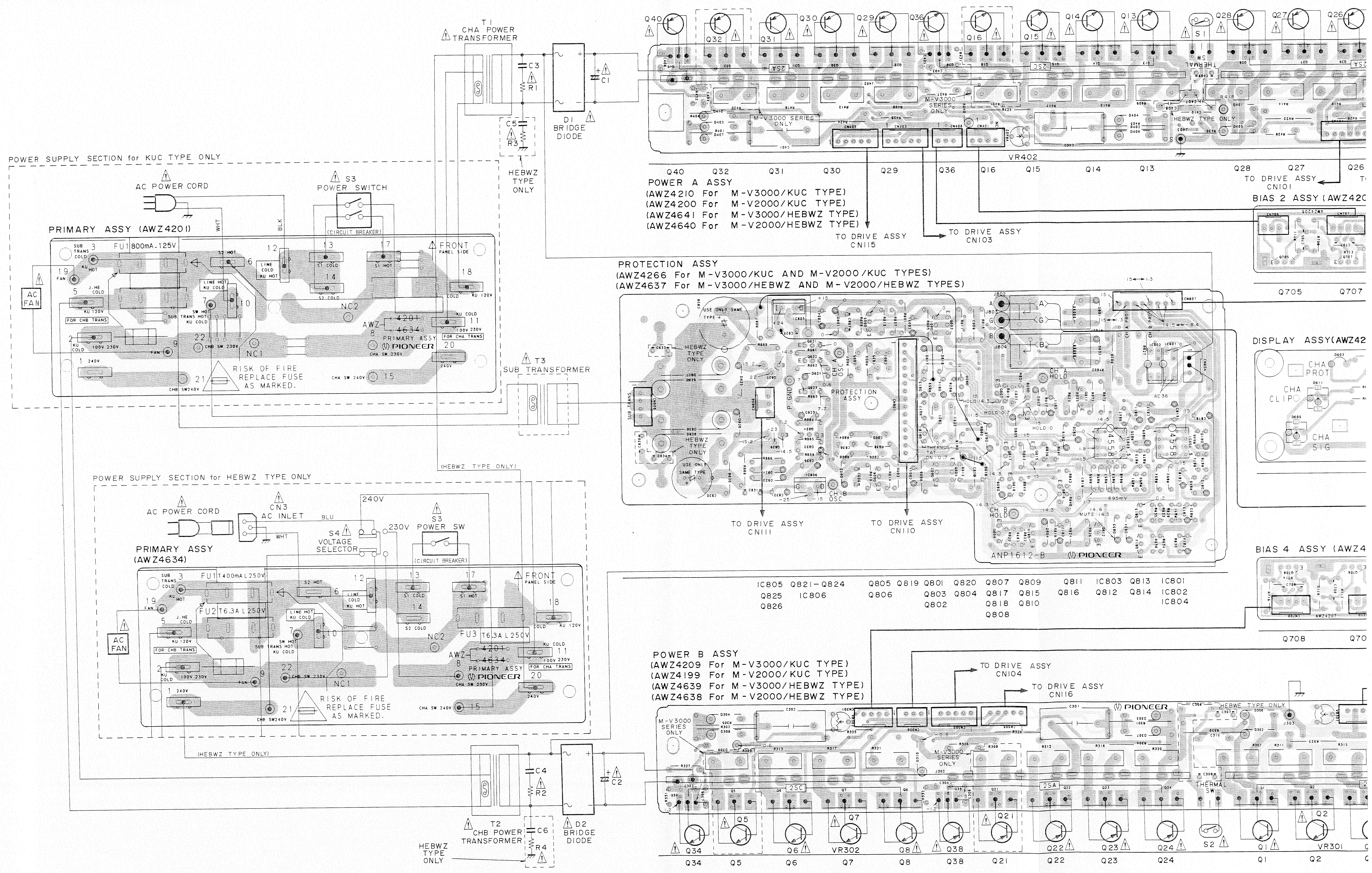
SAFETY RELATED COMPONENT WARNING

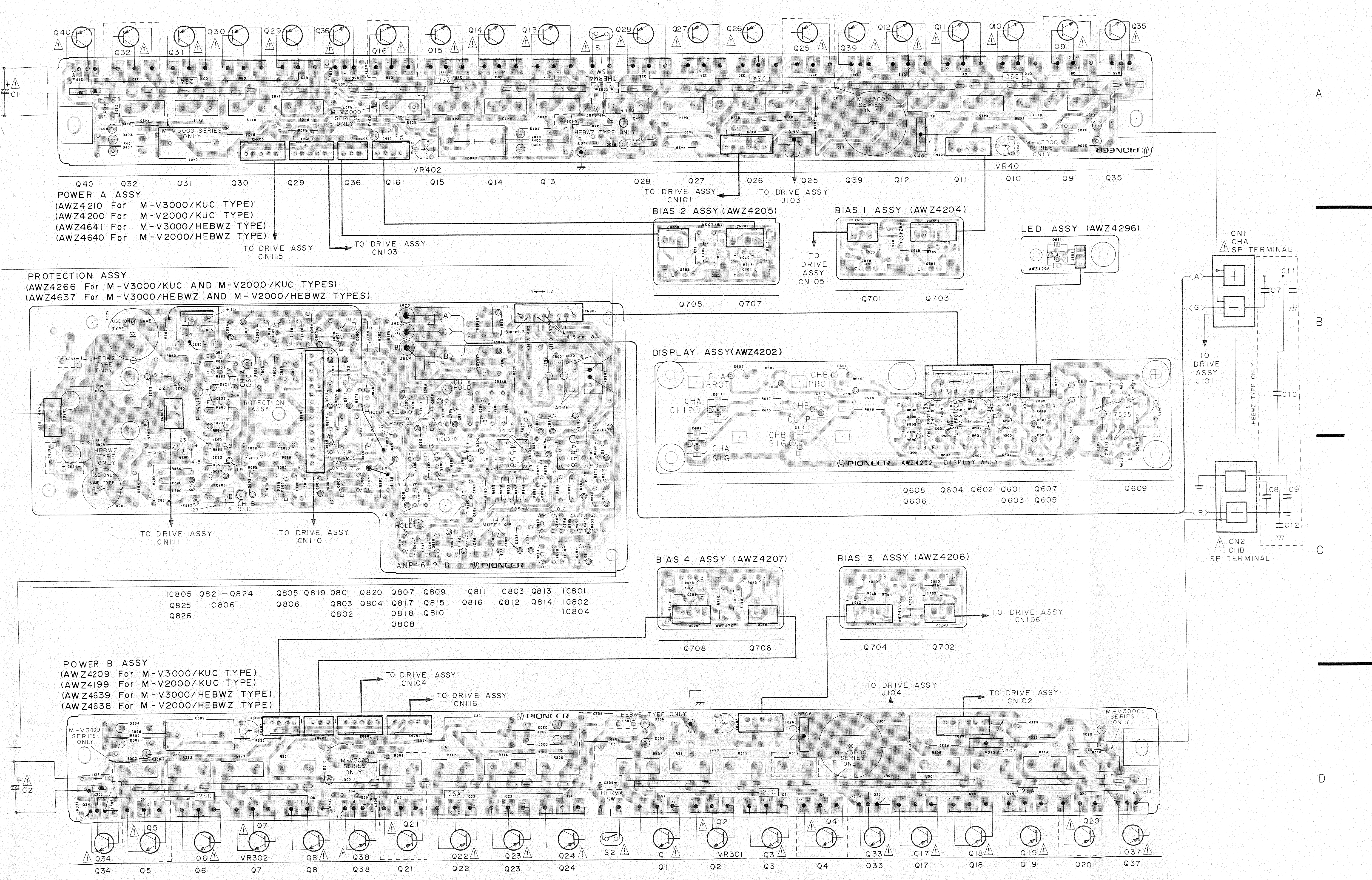
The ⚠ mark found on some component parts indicates
the importance of the safty factor of the part.
There force, when replacing be sure to use of indential designation.


POWER A ASSY
(AWZ4210 For M-V3000/KUC TYPE)
(AWZ4200 For M-V2000/KUC TYPE)
(AWZ4641 For M-V3000/HEBWZ TYPE)
(AWZ4640 For M-V2000/HEBWZ TYPE)
BIAS 1 ASSY (AWZ4204)
BIAS 2 ASSY (AWZ4205)
LED ASSY (AWZ4296)
DISPLAY ASSY(AWZ4202)
PROTECTION ASSY
(AWZ4286 For M-V3000/KUC AND M-V2000/KUC TYPES)
(AWZ4637 For M-V3000/HEBWZ AND M-V2000/HEBWZ TYPES)
BIAS 3 ASSY (AWZ4206)
BIAS 4 ASSY (AWZ4207)
POWER B ASSY
(AWZ4209 For M-V3000/KUC TYPE)
(AWZ4199 For M-V2000/KUC TYPE)
(AWZ4639 For M-V3000/HEBWZ TYPE)
(AWZ4638 For M-V2000/HEBWZ TYPE)
CN1 CHA SP TERMINAL
CN2 CHB SP TERMINAL
HEBWZ TYPE ONLY
M-V3000 SERIES ONLY
THERMAL SW
TO DRIVE ASSY J103
TO DRIVE ASSY CN101
TO DRIVE ASSY CN103
TO DRIVE ASSY CN115
TO DRIVE ASSY CN105
TO DRIVE ASSY J101
TO DRIVE ASSY CN110
TO DRIVE ASSY CN111
TO DRIVE ASSY CN104
TO DRIVE ASSY CN116
TO DRIVE ASSY J104
TO DRIVE ASSY CN102
VR401
VR402
VR301
VR302
PIONEER
A
B
C
D
9
8
7
6
5
4

This P.C.B. connection diagram is viewed from the foil side.


M-V3000, M-V2000
POWER A ASSY
(AWZ4210 for M-V3000/KUC TYPE)
(AWZ4200 for M-V2000/KUC TYPE)
(AWZ4641 for M-V3000/HEBWZ TYPE)
(AWZ4640 for M-V2000/HEBWZ TYPE)
PROTECTION ASSY
(AWZ4266 for M-V3000/KUC AND M-V2000/KUC TYPES)
(AWZ4637 for M-V3000/HEBWZ AND M-V2000/HEBWZ TYPES)
POWER B ASSY
(AWZ4209 for M-V3000/KUC TYPE)
(AWZ4199 for M-V2000/KUC TYPE)
(AWZ4639 for M-V3000/HEBWZ TYPE)
(AWZ4638 for M-V2000/HEBWZ TYPE)
PRIMARY ASSY (AWZ4201)
PRIMARY ASSY (AWZ4634)
POWER SUPPLY SECTION for KUC TYPE ONLY
POWER SUPPLY SECTION for HEBWZ TYPE ONLY
T1 CHA POWER TRANSFORMER
T2 CHB POWER TRANSFORMER
T3 SUB TRANSFORMER
D1 BRIDGE DIODE
D2 BRIDGE DIODE
AC POWER CORD
S3 POWER SWITCH
S4 VOLTAGE SELECTOR
CN3 AC INLET
AC FAN
RISK OF FIRE REPLACE FUSE AS MARKED.
DISPLAY ASSY
BIAS 2 ASSY
BIAS 4 ASSY
TO DRIVE ASSY CN101
TO DRIVE ASSY CN103
TO DRIVE ASSY CN115
TO DRIVE ASSY CN110
TO DRIVE ASSY CN111
TO DRIVE ASSY CN104
TO DRIVE ASSY CN116
HEBWZ TYPE ONLY
ANP1612-B
PIONEER


T1 CHA POWER TRANSFORMER
C3
R1
C1
D1 BRIDGE DIODE
C5
R3
HEBWZ TYPE ONLY
POWER SUPPLY SECTION for KUC TYPE ONLY
AC POWER CORD
S3 POWER SWITCH
CIRCUIT BREAKER
WHT
BLK
PRIMARY ASSY (AWZ4201)
FU1 800mA.125V
AC FAN
FRONT PANEL SIDE
NC1
NC2
PRIMARY ASSY
PIONEER
RISK OF FIRE REPLACE FUSE AS MARKED.
T3 SUB TRANSFORMER
(HEBWZ TYPE ONLY)
Q40 Q32 Q31 Q30 Q29 Q36 Q16 Q15 Q14 Q13 S1 Q28 Q27 Q26
M-V3000 SERIES ONLY
HEBWZ TYPE ONLY
THERMAL SW
VR402
POWER A ASSY
(AWZ4210 For M-V3000/KUC TYPE)
(AWZ4200 For M-V2000/KUC TYPE)
(AWZ4641 For M-V3000/HEBWZ TYPE)
(AWZ4640 For M-V2000/HEBWZ TYPE)
TO DRIVE ASSY CN115
TO DRIVE ASSY CN103
TO DRIVE ASSY CN101
BIAS 2 ASSY (AWZ420
Q705 Q707
PROTECTION ASSY
(AWZ4266 For M-V3000/KUC AND M-V2000/KUC TYPES)
(AWZ4637 For M-V3000/HEBWZ AND M-V2000/HEBWZ TYPES)
SUB TRANS
P GND
HOLD
THERMOSTAT
MUTE
ANP1612-B
PIONEER
TO DRIVE ASSY CN111
TO DRIVE ASSY CN110
DISPLAY ASSY(AWZ42
CHA PROT
CHA CLIP
CHA SIG
BIAS 4 ASSY (AWZ4
Q708 Q70
IC805 Q821–Q824 Q825 Q826 IC806
Q805 Q806 Q819 Q801 Q803 Q802 Q820 Q804 Q807 Q817 Q818 Q808 Q809 Q815 Q810 Q811 Q816 IC803 Q812 Q813 Q814 IC801 IC802 IC804
POWER SUPPLY SECTION for HEBWZ TYPE ONLY
AC POWER CORD
CN3 AC INLET
BLU
WHT
240V
230V
S4 VOLTAGE SELECTOR
S3 POWER SW
PRIMARY ASSY (AWZ4634)
FU1 T400mA L250V
FU2 T6.3A L250V
FU3 T6.3A L250V
AC FAN
(HEBWZ TYPE ONLY)
T2 CHB POWER TRANSFORMER
C4
R2
C2
C6
R4
D2 BRIDGE DIODE
HEBWZ TYPE ONLY
POWER B ASSY
(AWZ4209 For M-V3000/KUC TYPE)
(AWZ4199 For M-V2000/KUC TYPE)
(AWZ4639 For M-V3000/HEBWZ TYPE)
(AWZ4638 For M-V2000/HEBWZ TYPE)
TO DRIVE ASSY CN104
TO DRIVE ASSY CN116
M-V3000 SERIES ONLY
THERMAL SW
Q34 Q5 Q6 Q7 Q8 Q38 Q21 Q22 Q23 Q24 S2 Q1 Q2 VR302 VR301
1 2 3 4 5 6
A B C D


POWER A ASSY
(AWZ4210 For M-V3000/KUC TYPE)
(AWZ4200 For M-V2000/KUC TYPE)
(AWZ4641 For M-V3000/HEBWZ TYPE)
(AWZ4640 For M-V2000/HEBWZ TYPE)
Q40 Q32 Q31 Q30 Q29 Q36 Q16 Q15 Q14 Q13 Q28 Q27 Q26 Q25 Q39 Q12 Q11 Q10 Q9 Q35
S1 THERMAL SW
M-V3000 SERIES ONLY
HEBWZ TYPE ONLY
VR402
VR401
C1
TO DRIVE ASSY CN115
TO DRIVE ASSY CN103
TO DRIVE ASSY CN101
TO DRIVE ASSY J103
BIAS 2 ASSY (AWZ4205)
Q705 Q707
BIAS 1 ASSY (AWZ4204)
TO DRIVE ASSY CN105
Q701 Q703
LED ASSY (AWZ4296)
CN1 CHA SP TERMINAL
CN2 CHB SP TERMINAL
TO DRIVE ASSY J101
HEBWZ TYPE ONLY
C7 C8 C9 C10 C11 C12
PROTECTION ASSY
(AWZ4266 For M-V3000/KUC AND M-V2000/KUC TYPES)
(AWZ4637 For M-V3000/HEBWZ AND M-V2000/HEBWZ TYPES)
SUB TRANS
HEBWZ TYPE ONLY
USE ONLY SAME TYPE
PROTECTION ASSY
CHA OSC
CHB OSC
CHA HOLD
CHB HOLD
THERMOSTAT
MUTE
ANP1612-B PIONEER
TO DRIVE ASSY CN111
TO DRIVE ASSY CN110
IC805 Q821–Q824 Q825 Q826 IC806
Q805 Q806 Q819 Q801 Q803 Q802 Q820 Q804 Q807 Q817 Q818 Q808 Q809 Q815 Q810 Q811 Q816 IC803 Q812 Q813 Q814 IC801 IC802 IC804
DISPLAY ASSY (AWZ4202)
CHA PROT CHB PROT
CHA CLIP CHB CLIP
CHA SIG CHB SIG
PIONEER AWZ4202 DISPLAY ASSY
Q608 Q606 Q604 Q602 Q601 Q603 Q607 Q605 Q609
BIAS 4 ASSY (AWZ4207)
Q708 Q706
BIAS 3 ASSY (AWZ4206)
TO DRIVE ASSY CN106
Q704 Q702
POWER B ASSY
(AWZ4209 For M-V3000/KUC TYPE)
(AWZ4199 For M-V2000/KUC TYPE)
(AWZ4639 For M-V3000/HEBWZ TYPE)
(AWZ4638 For M-V2000/HEBWZ TYPE)
TO DRIVE ASSY CN104
TO DRIVE ASSY CN116
TO DRIVE ASSY J104
TO DRIVE ASSY CN102
M-V3000 SERIES ONLY
HEBWE TYPE ONLY
THERMAL SW
C2
Q34 Q5 Q6 Q7 Q8 Q38 Q21 Q22 Q23 Q24 S2 Q1 Q2 Q3 Q4 Q33 Q17 Q18 Q19 Q20 Q37
VR302 VR301

NOTE

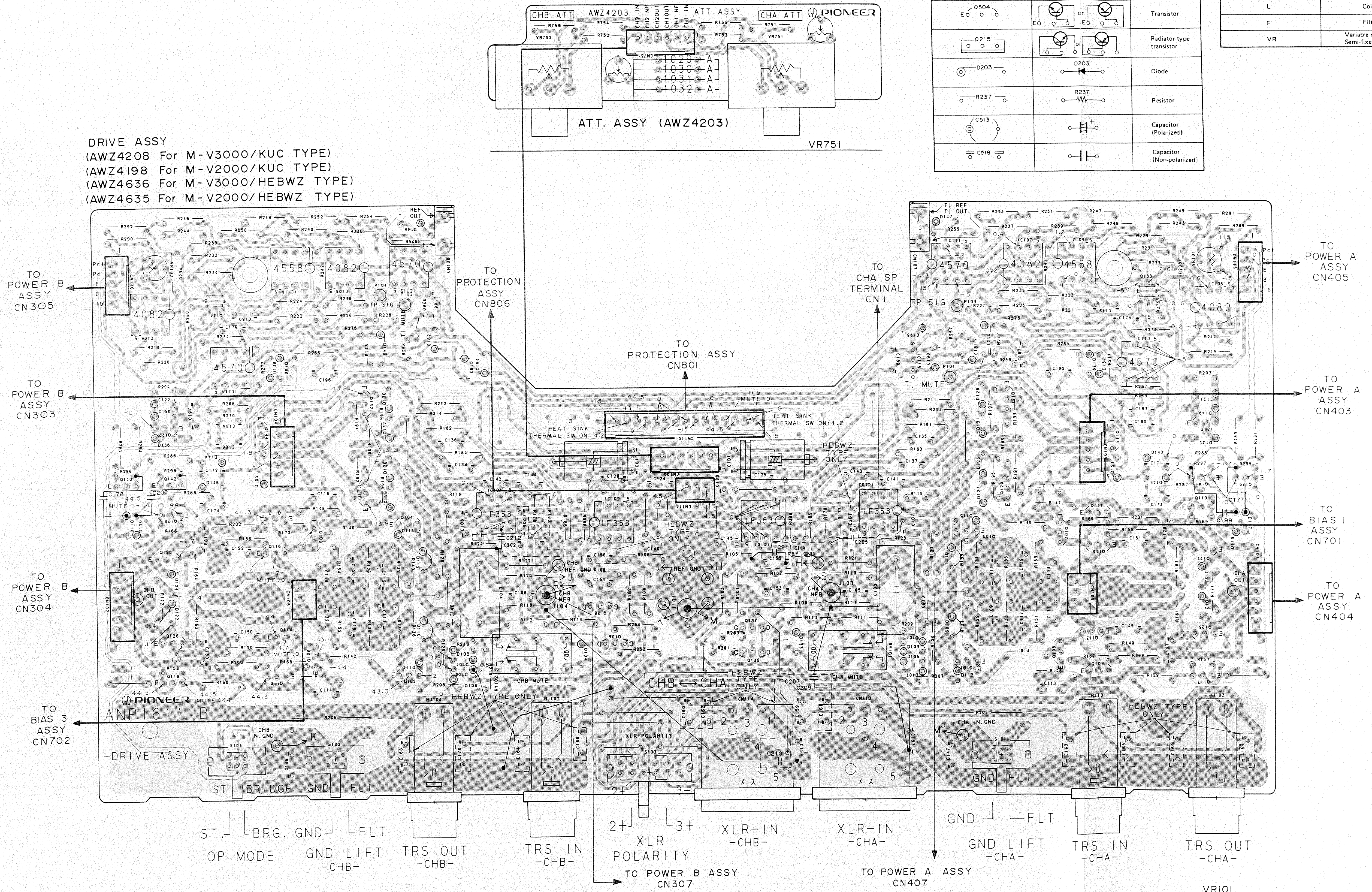
1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.
3. The capactor terminal marked with ◎ (double circles) shows negatine terminal.
4. The diode terminal marked with ◎ (double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 E	E or E	Transistor
Q215	or	Radiator type transistor
◎ D203	D203	Diode
R237	R237	Resistor
◎ C513	+	Capacitor (Polarized)
C518		Capacitor (Non-polarized)

Others

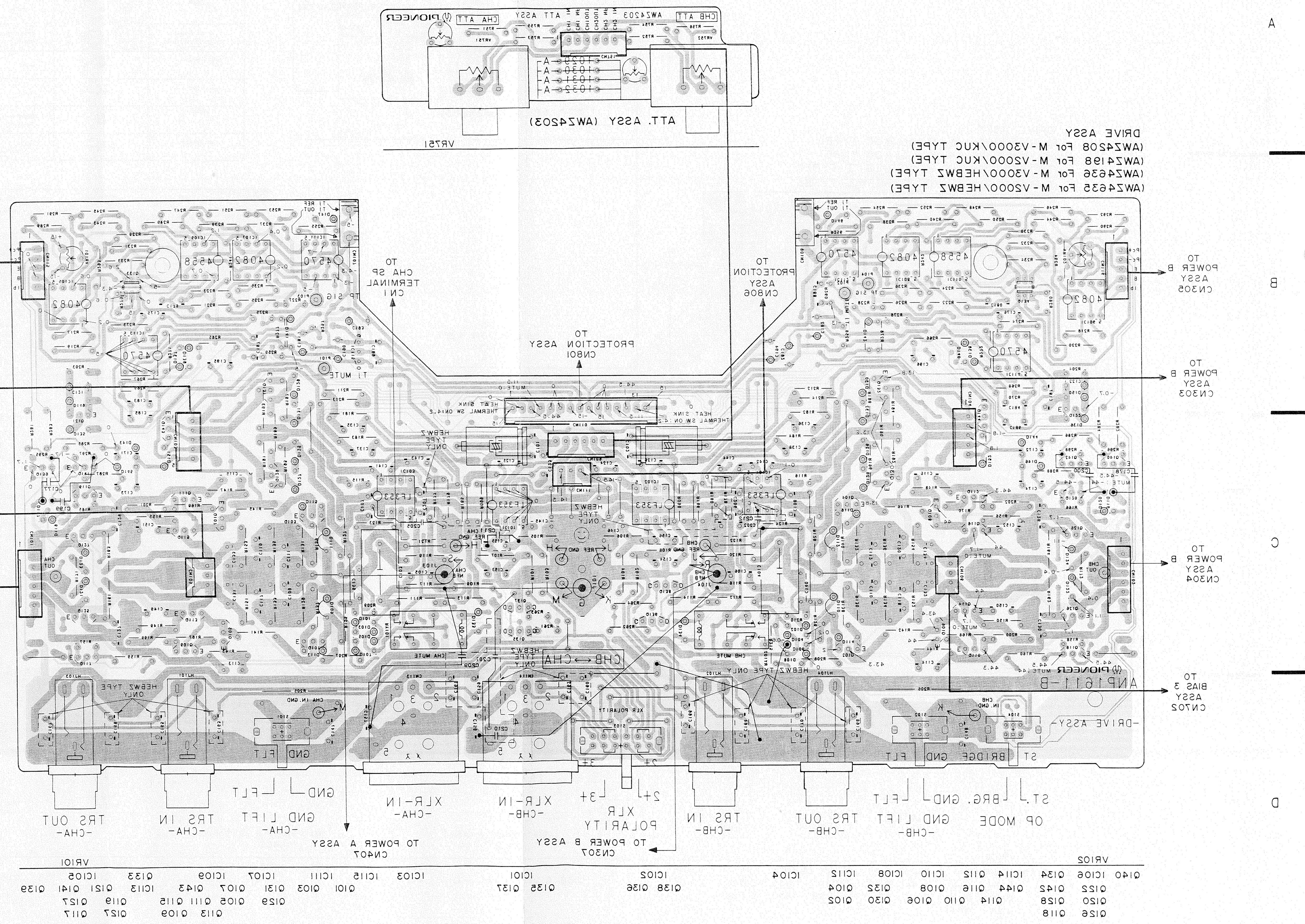
P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

DRIVE ASSY
(AWZ4208 For M-V3000/KUC TYPE)
(AWZ4198 For M-V2000/KUC TYPE)
(AWZ4636 For M-V3000/HEBWZ TYPE)
(AWZ4635 For M-V2000/HEBWZ TYPE)


CHB ATT
AWZ4203
ATT ASSY
CHA ATT
PIONEER
ATT. ASSY (AWZ4203)
VR751
TO PROTECTION ASSY CN806
TO PROTECTION ASSY CN801
TO CHA SP TERMINAL CN1
TO POWER B ASSY CN305
TO POWER B ASSY CN303
TO POWER B ASSY CN304
TO BIAS 3 ASSY CN702
TO POWER A ASSY CN405
TO POWER A ASSY CN403
TO BIAS 1 ASSY CN701
TO POWER A ASSY CN404
4558
4082
4570
LF353
TP SIG
TI MUTE
TI REF
TI OUT
HEAT SINK THERMAL SW ON:4.2
HEBWZ TYPE ONLY
CHB REF GND
CHA REF GND
CHB NFB
CHA NFB
J104
J103
CHB ↔ CHA
CHB MUTE
CHA MUTE
CHB IN. GND
CHA IN. GND
XLR POLARITY
PIONEER
ANP1611-B
-DRIVE ASSY-
ST
BRIDGE
GND
FLT
ST. BRG. GND FLT
OP MODE
GND LIFT -CHB-
TRS OUT -CHB-
TRS IN -CHB-
2+ 3+
XLR POLARITY
TO POWER B ASSY CN307
XLR-IN -CHB-
XLR-IN -CHA-
TO POWER A ASSY CN407
GND FLT
GND LIFT -CHA-
TRS IN -CHA-
TRS OUT -CHA-

VR102
Q140 IC106 Q134 IC114 Q112 IC110 IC108 IC112 IC104 IC102 IC101 IC103 IC115 IC111 IC107 IC109 Q133 IC105
Q122 Q142 Q144 Q116 Q108 Q132 Q104 Q138 Q136 Q135 Q137 Q101 Q103 Q131 Q107 Q143 IC113 Q121 Q141 Q139
Q120 Q128 Q114 Q110 Q106 Q130 Q102 Q129 Q105 Q111 Q115 Q119 Q127
Q126 Q118 Q113 Q109 Q127 Q117
VR101

This P.C.B. connection diagram is viewed from the foil side.


ATT. ASSY (AWZ4203)
VR751
DRIVE ASSY
(AWZ4208 For M-V3000/KUC TYPE)
(AWZ4198 For M-V2000/KUC TYPE)
(AWZ4636 For M-V3000/HEBWZ TYPE)
(AWZ4635 For M-V2000/HEBWZ TYPE)
TO POWER A ASSY CN405
TO POWER A ASSY CN403
TO BIAS 1 ASSY CN701
TO POWER A ASSY CN404
TO CHA SP TERMINAL CN1
TO PROTECTION ASSY CN801
TO PROTECTION ASSY CN806
TO POWER B ASSY CN305
TO POWER B ASSY CN303
TO POWER B ASSY CN304
TO BIAS 3 ASSY CN702
HEBWZ TYPE ONLY
CHB ↔ CHA
ANP1611-B
-DRIVE ASSY-
TRS OUT -CHA-
TRS IN -CHA-
GND LIFT -CHA-
XLR-IN -CHA-
XLR-IN -CHB-
2+ 3+
XLR POLARITY
TRS IN -CHB-
TRS OUT -CHB-
GND LIFT -CHB-
ST. BRG. GND FLT
OP MODE
TO POWER A ASSY CN407
TO POWER B ASSY CN307
VR101
IC105 Q133 IC109 IC107 IC111 IC115 IC103
Q139 Q141 IC121 Q121 IC113 Q143 Q107 Q107 Q131 Q103 Q101
Q127 Q119 Q105 Q111 Q115 Q129
Q117 Q127 Q109 Q113
IC101
Q135 Q137
IC102
Q138 Q136
IC104
VR102
IC112 IC108 IC110 IC112 IC114 Q134 IC106 Q140
Q104 Q132 Q108 Q116 Q144 Q142 Q122
Q102 Q130 Q106 Q110 Q114 Q128 Q120
Q118 Q126

4. PCB PARTS LIST

NOTES:

- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

  Ex.1 *When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).*

  $560\Omega \rightarrow 56\times10^1 \rightarrow 561$ ………………………… *RD1/8PM*$\boxed{5}\boxed{6}\boxed{1}$*J*

  $47k\Omega \rightarrow 47\times10^3 \rightarrow 473$ ………………………… *RD1/4PS*$\boxed{4}\boxed{7}\boxed{3}$*J*

  $0.5\Omega \rightarrow$ 0R5 ………………………… *RN2H*$\boxed{0}\boxed{R}\boxed{5}$*K*

  $1\Omega \rightarrow$ 010 ………………………… *RS1P*$\boxed{0}\boxed{1}\boxed{0}$*K*

  Ex.2 *When there are 3 effective digits (such as in high precision metal film resistors).*

  $5.62k\Omega \rightarrow 562\times10^1 \rightarrow 5621$ ………………………… *RN1/4PC*$\boxed{5}\boxed{6}\boxed{2}\boxed{1}$*F*

Mark	No.	Description	Parts No.

LIST OF ASSEMBLIES

Mark	No.	Description	Parts No.
		PRIMARY ASSY	AWZ4201
		DISPLAY ASSY	AWZ4202
		ATT ASSY	AWZ4203
		BIAS 1 ASSY	AWZ4204
		BIAS 2 ASSY	AWZ4205
		BIAS 3 ASSY	AWZ4206
		BIAS 4 ASSY	AWZ4207
		DRIVE ASSY	AWZ4208
		LED ASSY	AWZ4296
		POWER B ASSY	AWZ4209
		POWER A ASSY	AWZ4210
		PROTECTION ASSY	AWZ4226

PRIMARY ASSY

PRIMARY ASSY has no service part.

DISPLAY ASSY

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	IC601		HA17555PS
	Q601,Q602,Q605−Q608		2SA1048
	Q603,Q604		2SC2458
	Q609		2SC2458
	D609,D610		AEL1064
	D603,D604,D611,D612		AEL1065
	D601,D602,D605−D608, D613,D614		HSS104−02
	D615		RD6.2ESB2

CAPACITORS

Mark	No.	Description	Parts No.
	C601,C602		CEJA330M25
	C604,C605		CKDYB102K50
	C603		CKPYX103N25

RESISTORS

Mark	No.	Description	Parts No.
	R617,R618		RD1/2PM122J
	R625		RD1/2PM122J
	R615,R616		RD1/2PM911J
		Other Resistors	RD1/8PM□□□J

ATT ASSY

RESISTORS

Mark	No.	Description	Parts No.
	VR751,VR752(10K)		ACW1015
	R753,R754		RD1/2PM102J
	R755,R756		RD1/2PM224J
	R751,R752		RN1/2PC3601F

BIAS 1 ASSY

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	Q701,Q703		2SC2240

CAPACITORS

Mark	No.	Description	Parts No.
	C701,C703		CQPA221J100

RESISTORS

Mark	No.	Description	Parts No.
	R705,R707		RD1/2PM102J
	R701		RD1/2PM162J
	R703		RD1/2PM752J

BIAS 2 ASSY

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	Q705,Q707		2SC2240

CAPACITORS

Mark	No.	Description	Parts No.
	C705,C707		CQPA221J100

RESISTORS

Mark	No.	Description	Parts No.
	R713,R715		RD1/2PM102J
	R711		RD1/2PM162J
	R709		RD1/2PM301J

BIAS 3 ASSY

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	Q702,Q704		2SC2240

CAPACITORS

Mark	No.	Description	Parts No.
	C702,C704		CQPA221J100

RESISTORS

Mark	No.	Description	Parts No.
	R706,R708		RD1/2PM102J
	R702		RD1/2PM162J
	R704		RD1/2PM752J

BIAS 4 ASSY

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	Q706,Q708		2SC2240

CAPACITORS

Mark	No.	Description	Parts No.
	C706,C708		CQPA221J100

RESISTORS

Mark	No.	Description	Parts No.
	R714,R716		RD1/2PM102J
	R712		RD1/2PM162J
	R710		RD1/2PM301J

DRIVE ASSY

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	IC101−IC104		LF353NPOQ
	IC109,IC110		NJM4558DXP
	IC115		NJM79L05A
	IC105−IC108		UPC4082C
	IC111−IC114		UPC4570C
	Q117,Q118		2SA1048
	Q127,Q128		2SA1145
	Q103,Q104,Q109,Q110, Q129,Q130,Q141,Q142		2SA970
	Q105,Q106,Q113,Q114		2SA992
	Q107,Q108,Q115,Q116		2SC1845
	Q101,Q102,Q111,Q112, Q131,Q132,Q139,Q140		2SC2240
	Q119−Q122		2SC2458
	Q125,Q126		2SC2705
	Q133,Q134		2SC3067−F
	Q135−Q138		2SK1061
	Q143,Q144		RN1203
	D109−D112		AEL1108
	D101−D108,D113−D150		HSS104−02
	D151,D152		RD3.6ESB2

SWITCHES

Mark	No.	Description	Parts No.
	S103		ASH1005
	S101,S102		ASH1029
	S104		ASH1029

RELAYS

Mark	No.	Description	Parts No.
	RY101,RY102		ASR1040

CAPACITORS

Mark	No.	Description	Parts No.
	C103,C104	(1u/100V)	ACE1053
	C101,C102	(22/50)	ACH1226
	C125,C126,C145,C146, C153,C154		CCCSL100D500
	C123,C124		CCCSL101K500
	C143,C144		CCCSL680K500
	C175,C176		CCDSL150J50
	C179,C180		CCPUSL680J50
	C181,C182		CEANP100M50
	C190		CEAS100M50
	C121,C122		CEJA010M50
	C147,C148,C177,C178, C197,C199,C200		CFTXA103J50
	C189,C192−C196		CFTXA104J50
	C171−C174		CKPUYB101K50
	C187,C188		CKPUYB151K50
	C183−C186		CKPUYB221K50
	C105,C106		CMA100D500
	C109−C112		CMA101J500
	C117−C120		CMA181J500
	C127−C130		CMA151J500
	C135−C138		CMA330J500
	C157,C158		CQPA103J100
	C113−C116,C141,C142		CQPA331J100
	C149−C152		CQPA471J100
	C107,C108,C139,C140		CQPA473J100
	C131−C134		CQSXA331J160

RESISTORS

Mark	No.	Description	Parts No.
	VR101,VR102	(10k)	VRTS6VS103
	R121,R122,R125−R128, R191−R194		RD1/2PM102J
	R123,R124		RD1/2PM103J
	R129−R132		RD1/2PM112J
	R151−R154		RD1/2PM153J
	R285−R288		RD1/2PM183J
	R133−R136		RD1/2PM273J
	R143,R144,R147,R148		RD1/2PM331J
	R189,R190		RD1/2PM332J
	R159,R160		RD1/2PM363J
	R98,R99		RD1/2PM470J
	R195−R198		RD1/2PM510J
	R149,R150,R155,R156		RD1/2PM750J
	R161−R164		RD1/2PMF101J
	R171,R172		RD1/2PMF750J
	R281−R284		RD1/4PMF241J
	R141,R142,R145,R146		RFA1/4PS101J
	R137−R140		RFA1/4PS470J
	R113,R114		RN1/2PC1001F
	R101−R104,R237−R240, R245−R248,R291−R294		RN1/2PC1002F
	R243,R244,R249,R250		RN1/2PC1003F
	R105−R108		RN1/2PC1152F
	R179,R180		RN1/2PC1301F
	R177,R178		RN1/2PC1502F
	R111,R112		RN1/2PC2001F
	R185,R186		RN1/2PC2201F
	R181−R184		RN1/2PC2202F
	R215		RN1/2PC2372F
	R109		RN1/2PC3002F
	R265−R274		RN1/2PC4702F
	R225,R226		RN1/2PC5101F
	R217,R218,R235,R236, R241,R242,R289,R290		RN1/2PC5102F
	R233,R234		RN1/2PC6200F
	R231,R232		RN1/2PC6801F
	R117,R118		RN1/2PC6802F
	R119,R120		RN1/2PC6803F
	R205,R206		RS3LMF271J
		Other Resistors	RD1/8PM□□□J

OTHERS

Mark	No.	Description	Parts No.
		JACK	AKN1002

LED ASSY

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	D651		AEL1065

POWER B ASSY

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	D301–D308		11E2
	D309,D310		S5566

COILS

Mark	No.	Description	Parts No.
	L301		ATH1055

CAPACITORS

Mark	No.	Description	Parts No.
	C301,C302	(0.22u,250)	ACE1052
	C303,C304		CCCSL330K500
	C305,C306		CKCYB102K500
	C310		CQMA473K400

RESISTORS

Mark	No.	Description	Parts No.
	VR302		VRTS6VS101
	VR301	(220)	VRTS6VS221
	R306–R321	(0.22, 5W)	ACN1096
	R326–R329		RD1/2PMFL270J
	R322–R325		RS2LMF4R7J
	R303		RS3LMF4R7J
	R330		RS3LMF4R7J
	R301,R302		RS3LMF6R8J
	R304,R305		RS3LMF6R8J
		Other Resistors	RD1/8PM□□□J

POWER A ASSY

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	D401–D408		11E2
	D409,D410		S5566

COILS

Mark	No.	Description	Parts No.
	L401		ATH1055

CAPACITORS

Mark	No.	Description	Parts No.
	C401,C402	(0.22u,250V)	ACE1052
	C403,C404		CCCSL330K500
	C405,C406		CKCYB102K500
	C410		CQMA473K400

RESISTORS

Mark	No.	Description	Parts No.
	VR402		VRTS6VS101
	VR401	(220)	VRTS6VS221
	R406–R421	(0.22,5W)	ACN1096
	R426–R429		RD1/2PMFL270J
	R422–R425		RS2LMF4R7J
	R403,R430		RS3LMF4R7J
	R401,R402,R404,R405		RS3LMF6R8J
		Other Resistors	RD1/8PM□□□J

PROTECTION ASSY

SEMICONDUCTORS

Mark	No.	Description	Parts No.
	IC803,IC804		NJM4558DXP
	IC805		NJM78M15FAS
	IC806		NJM79M15FA
	IC801,IC802		PC817CD
	Q807,Q808,Q811,Q812, Q815–Q818,Q824		2SA1048
⚠	Q826		2SA985
⚠	Q825		2SC2275
	Q801–Q806,Q809,Q810, Q813,Q814,Q819–Q823		2SC2458
⚠	D827–D830		30DF2FC–2
	D801–D806,D809–D814, D817–D820,D822–D824, D831–D834		HSS104–02
⚠	D825,D826		RD15ESB3
	D815,D816		RD2.7ESB2
	D821		RD6.2ESB2

RELAYS

Mark	No.	Description	Parts No.
	RY801,RY802		ASR1036

CAPACITORS

Mark	No.	Description	Parts No.
	C835,C836		CCCSL060D500
	C801,C802,C805,C806		CCCSL151K500
⚠	C830		CEAS102M35
⚠	C829		CEAS222M35
	C815,C816,C824,C832		CEHAQ010M50
	C811,C812		CEHAQ100M50
	C813,C814,C823		CEHAQ220M50
	C803,C804		CEHAQ330M16
	C826		CEHAQ3R3M50
	C817,C818		CEHAQR47M50
	C807,C808,C825,C831 C837,C838		CFTXA104J50
	C809,C810,C819, C821,C822		CKPYX103N25

RESISTORS

Mark	No.	Description	Parts No.
	R801,R802		RD1/2PM563J
	R866		RD1/2PMF4R7J
	R869,R870		RD1/2PMFL122J
	R871,R872		RD1/2PMFL470J
	R867,R868		RFA1/4PS270J
	R827,R828		RS2LMF822J
		Other Resistors	RD1/8PM□□□J

OTHERS

Mark	No.	Description	Parts No.
		SCREW	ABA–298

5. ADJUSTMENTS

PRECAUTIONS FOR SERVICE

- The primary power supply current is 23A for the 4 ohm rated output and 30A for 2 ohm limiter operation. Each channel receives about half this current. Pay attention to the power supply capacity.
- When checking operations, the lead wires must be at least AWG16.
- The new type of protective circuit cuts off the bias current when the amp is muted. Therefore, it is more difficult to discharge the electrolytic capacitors for the power supply, so care is required during servicing. Use a resistor of about 15 ohm 10W to discharge the capacitors before working on this equipment.
- Adjustment of the RTD (rapid thermal detecting) protective circuit is critical for the reliability and durability of this instrument. Always adjust it according to the instructions and double check the adjustment values. This circuit must be re-adjusted after replacing DRIVE assembly, POWER assembly, Q133, Q134, Q8, or Q15.
- Since the heat sink is cooled with forced air, it can not cool with the hood open. Do not check the power of leave the power on for a long time with the cover open.
- To avoid shorting circuits to the chassis, adjust the adjustment locations with a plastic screwdriver.
- If there is a power transistor breakdown or other power system breakdown, check output short relays RY801 and RY802 to make sure they have note fused.

5.1 IDLE ADJUSTMENT

1. Turn on the power switch. Remove the side frame.
2. Pre – adjust the output transistor idle current immediately after switching on the power.

Measurement Point	Adjusting Point	Specification
R311 (0.22 ohm)	VR301 (POWER B Assembly)	Voltage between both side of resistor 6.6 ± 0.7 mV
R313 (0.22 ohm)	VR302 (POWER B Assembly)	
R411 (0.22 ohm)	VR401 (POWER A Assembly)	
R413 (0.22 ohm)	VR402 (POWER A Assembly)	

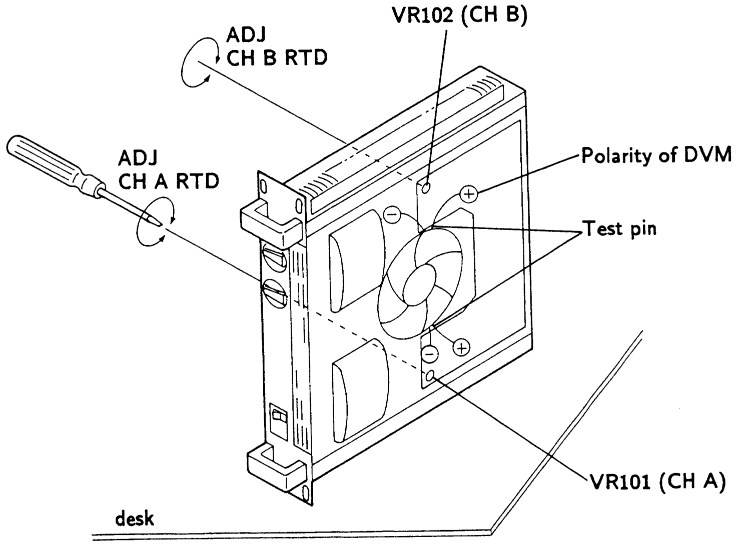
3. Attach the top cover to the set, place the set horizontal and warm it up for 5 minutes.
4. After this warmup, adjust the output transistor idling without switching off the power.

Measurement Point	Adjusting Point	Specification
R311 (0.22 ohm)	VR301 (POWER B Assembly)	Voltage between both side of resistor 11 ± 1 mV
R313 (0.22 ohm)	VR302 (POWER B Assembly)	
R411 (0.22 ohm)	VR401 (POWER A Assembly)	
R413 (0.22 ohm)	VR402 (POWER A Assembly)	

5.2 RTD ADJUSTMENT

5.2.1 RTD Adjustment Precautions

- RTD protection like a temperature measurer that outputs a DC value proportional to the chip temperature of the power transistor on the heat sink. Therefore, carry out this adjustment before the power transistors warm up.
- After the idle adjustment, switch off the power, remove the top and bottom covers, and stand the set on its side. Connect a digital voltmeter (DVM) to test pins, switch on the power, then adjust the VR. The heat sink must be at the same temperature as the room. Carry out the adjustment quickly before the heat sink warms up. With the top cover off, the air cooling does not work. Even in idling, the heat sink overheats if not cooled.



- Always use a DVM for the adjustment. A circuit tester generates too much error.

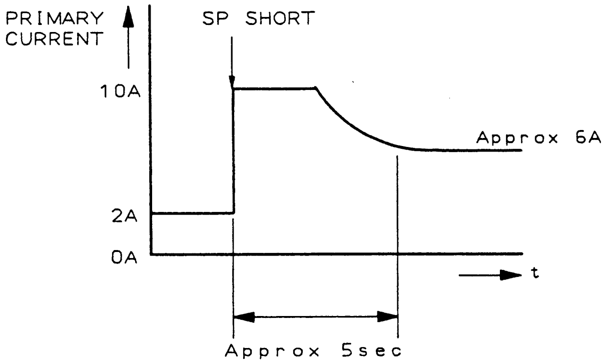
5.2.2 Adjustment Method

Measure the voltage difference between TP TEP and TP REF of CN107(CN108) of DRIVE assembly with a digital voltmeter (DVM) and adjust VR101(VR102) so that Tj - OUT(TP TEP) is +1040±30 mV relative to Tj - REF(TP REF). This item is carried out immediately after Item 4 of 5.1 IDLE adjustment. The adjustment value of 1040 mV is for a room temperature of 25℃.
If the temperature is greater than 28℃, subtract 12.5 mV from the adjustment center value for each 1℃ of temperature above 25℃. If the temperature is below 22℃, add 12.5 mV for each 1℃ of temperature below 22℃.

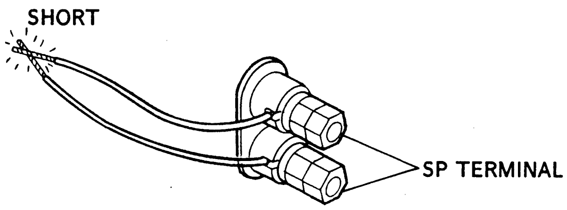
5.3 POST-SERVICE PRODUCT OPERATION CHECK

After repairs, always check the safety items before shipping the product.

- +B voltage check — Verify the +VB specified for no load and no signal.
  ±15V protection
  ±15V analog
- Power check — Verify the output for each channel at 8 ohm or 4 ohm. There must be no oscillation up to THD 10% clip.
- Load pin short check — Short the speaker pins during 8 ohm rated output. The circuit breaker must not be tripped. The power supply primary current must decrease as shown in the figure below.
  Circuit breaker tripped → Pc limiter is not operating properly
  Current does not decrease → RTD protection circuit maladjustment or is not operating properly



- Bias current check — Switch on power, wait at least 10 minutes, then check R311, R411, R313, and R413.
- AC fan operation — Must turn properly.
- Indicators lighting up — Check that the signal indicators light up for output of 5V or greater.
  The indicators are designed so that if someone connects any internal connector incorrectly or forgets to connect it altogether, this will show up in the indicator functioning.
- The set can pass the test even with the transistors below broken. Always check the base-emitter voltages of them when repairing breakdowns in POWER assembly.
  Affect sound quality : Q704, Q708, Q703, Q707
  Cutoff circuit (safety for when fan stops) : Q143, Q144
- Rear panel screws — All must be securely tightened. They affect RFI. Pay particular care to the XLR connector screws.
- Air filter cleaning — Clean the air filters at the bottom of the front panel and in the bottom plate (M-V3000 only).
  Note: Extend the lead wire (at least AWG16 and no longer than 30 cm) from the speaker terminal and short. Sparks would break the terminal.



5. REGLAGES

PRECAUTIONS

- Le courand d'alimentation primaire est de 23 A pour une sortie nominale de 4 Ω et de 30 A lors du fonctionnement du limiteur. Le courant se répartit également sur chaque canal. Faire attention à la capacité d'alimentation.
- Lors des vérifications de fonctionnement, les fils doivent être de norme AWG16 au minimum.
- Le nouveau type de circuit de protection coupe le courant de plarisation lorsque le circuit de l'amplificateur est interrompu. Il est par conséquent plus difficille de décharger les condensateurs électrochimiques pour l'alimentation de courant, et il est nécessaire d'être prudent au cours des réparations. Utiliser une résistance d'environ 15Ω 10 W pour décharger les condensateurs avant de réparer cet appareil.
- Le réglage du circuit de protection RTD (rapid thermal detecting) est capital pour garantir la fiabilité et la résistance de cet appareil. Toujours le régler conformément aux instructions et vérifier deux fois les valeurs de réglage. Ce circuit doit être réajusté après avoir remplacé l'ensemble de l'excitateur, d'alimentation, Q133, Q134, Q8 ou Q16.
- Comme le dissipateur thermique est refroidi à l'air pulsé, il ne peut pas refroidir lorsque le couvercle est ouvert. Ne pas vérifier l'alimentation ou ne pas laisser l'alimentation en service pendant longtemps lorsque le couvercle est ouvert.
- Pour éviter des courts – circuits sur le châssis, effectuer les différents réglages avec un tournevis en plastic.
- En cas de panne de transistor d'alimentation ou de toute autre panne, vérifier les relais de court-circuit de sortie RY801 (RY802) pour s'assurer qu'ils n'ont pas brûlé.

5.1 REGLAGE DU RALENTI

1. Enclencher l'interrupteur. Retirer le cadre latéral.
2. Prerégler immédiatement après la mise sous tension le courant de ralenti du transistor de sortie.

Point de mesurage	Point de réglage	Spécification
R311 (0,22 ohm)	VR301 (POWER B Assembly)	Tension traversant la résistor 6,6 ± 0,7 mV
R313 (0,22 ohm)	VR302 (POWER B Assembly)	
R411 (0,22 ohm)	VR401 (POWER A Assembly)	
R413 (0,22 ohm)	VR402 (POWER A Assembly)	

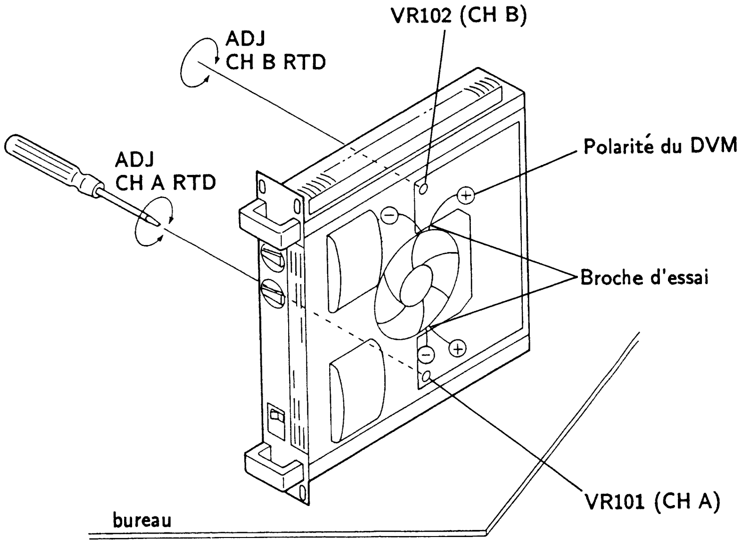
3. Fixer le couvercle supérieur sur l'appareil, placer l'appareil à l'horizontal et le laisser chauffer pendant environ 5 minutes.
4. Régler ensuite le ralenti du transistor de sortie sans mettre hors tension.

Point de mesurage	Point de réglage	Spécification
R311 (0,22 ohm)	VR301 (POWER B Assembly)	Tension traversant la résistor 11 ± 1 mV
R313 (0,22 ohm)	VR302 (POWER B Assembly)	
R411 (0,22 ohm)	VR401 (POWER A Assembly)	
R413 (0,22 ohm)	VR402 (POWER A Assembly)	

5.2 REGLAGE DE RTD

5.2.1 Réglage de RTD Précautions

- Le circuit de protection RTD utilise un thermostat qui génère un courant continu proportionnel à la température de la puce du transistor d'alimentation sur le dissipateur de chaleur.
- Apres le réglage de ralenti, couper l'alimentation, retirer les couvercles supérieur et inférieur et mettre l'appareil de côté. Brancher un voltmètre numérique (DVM) pour contrôler les broches, remettre sous tension, puis regler la régulation de tension. Le dissipateur de chaleur doit être à la même température que la pièce. Effectuer rapidement le réglage avant que la chaleur du dissipateur n'augmente. Lorsque le couvercle supérieur est enlevé, le refroidissement par circulation d'air ne fonctionne pas. Même si l'appareil functionne de ralenti, le dissipateur chauffe s'il n'est pas refroidit.



- Utiliser toujours un voltmètre numérique pour effectuer le réglage. Un contrôleur de cuicuit n'est pas assez précis.

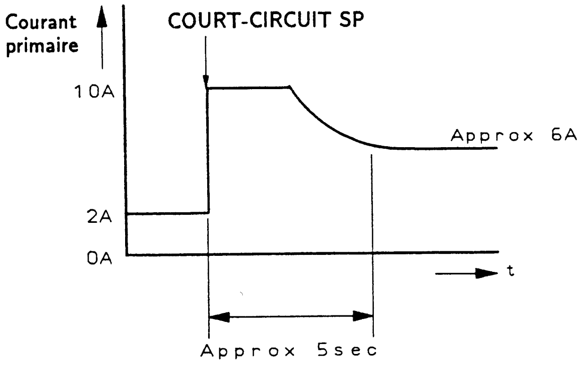
5.2.2 Méthode de Réglage

Mesurer la différence de tensioon entre les broches TP TEP et TP REF de CN107(CN108) de l'emsemble de l'excitateur avec un voltmètre numérique (DVM) et régler VR101(VR102) de sorte que Tj-OUT(TP TEP) est +1040±30 mV par rapport à Tj-REF(TP REF). Ce paramètre est exécuté après le paramètre 4 de "5.1 REGLAGE DU RALENTI". La valeur doit être réglée sur 1040mV pour une température ambiante de 25℃. Si la température est supérieure à 28℃, soustraire 12,5 mV de la valeur moyenne de réglage pour chaque degré au-dessus de 25℃. Si la température est en-dessous de 22℃, ajouter 12,5 mV pour chaque degré en-dessous de 25℃.

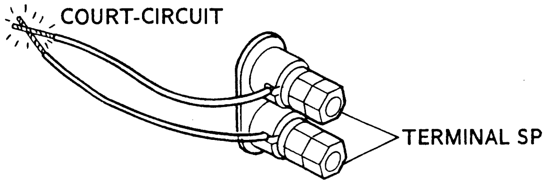
5.3 VERIFICATION APRES REPARATION

Après une réparation, toujours effectuer toutes les vérifications suivantes avant d'expédier l'appareil.

- Vérification de la tension +B Verifier la tension +VB spécifiée sans charge et sans signal.
  Protection ±15V
  Analogue ±15V
- Vérification de l'alimentation Vérifier la sortie de chaque canal à 8Ω ou 4Ω. Il ne doit y avoir aucune oscillation jusqu'à la coupure de 10% DHT.
- Vérification par court-circuit de la broche de charge
  Court-circuiter les broches de haut-parleur lorsque la sortie nominale est de 8Ω. Le disjoncteur ne doit pas se déclencher. Le courant d'alimentation primaire doit diminuer comme indiqué sur la figure ci-dessous.
  Disjoncteur déclenché → Le délimiteur de Pc imprimé ne fonctionne pas correctement.
  Le courant ne mininue pas → Mauvais réglage du circuit de protection RTD ou panne



- Vérification du courant de polarisation Mettre sous tension et attendre au moins 10 minutes, puis vérifier les résistances R311, R411, R313, R413.
- Functionnement du ventaliteur CA Il doit tourner correctement.
- Témoins Vérifier que les témoins de signal s'allument lorsque la sortie est de 5V ou plus.
  Les témoins sont destinés à indiquer les témoins fonctionnant dans le cas d'une mauvaise connextion interne ou si une connexion n'a pas été effectuée.
- Le test puet être sauté même si les transistors sont endommagés. Toujours vérifier la tension de l'émetteur-base des transistors lors de la réparation de panne dans l'ensemble POWER.
  Transistors affectant la qualité du son : Q704, Q708, Q703, Q707
  Cutoff circuit : Q143, Q144
- Vis du panneau arrière
  Toutes les vis doivent être fermement serrées.
  Elles affectant les interférences RFI. Serrer particulièrement avec soin les vis du connecteur XLR.
- Filtres à air Nettoyer les filtres à air au bas du panneau avant et sur le plaque du socle (M-V3000 uniquement).
  Remarque : Eloigner le fil (au moins AWG16 et pas plus long que 0.3 mètres) de la borne de haut-parleur pour éviter les court-circuits. Des étincelles risquent de détruire la borne.



5. AJUSTES

PRECAUCIONES PARA EL SERVICIO

- La corriente de alimentación primaria es de 23 A para una salida nominal de 4 ohmios, y de 30 A para la operación con un limitador de 2 ohminos. Cada canal recibirá aproximadamente la mitad de esta corriente. Preste atención a la capacidad de la fuente de alimentación.
- Cuando compruebe las operaciones, los conductors deberán ser del calibre AWG16 por lo menos.
- El nuevo tipo de circuito protector corta la corriente de polarización cuando se silencia el amplificador. Por lo tanto, es más dificil descarger los capacitores electroliticos de la fuente de alimentación, motivo por el que tendrá que tener cuidado al realizar el servicio. Emplee un resistor de unos 15 ohminos y 10 W para descargar los capacitores antes de trabajar en este equipo.
- El ajuste del circuito protector detector rápido de calor (RTD) es critico para la fiabilidad y durabilidad de este instrumento. Ajústelo siempre de acuerdo con las instrucciones y compruebe dos veces los valores ajustados. Este circuito deberá reajustarse después de haber reemplazado el conjunto de excitación, el conjunto de alimentación, Q133, Q134, Q8, o Q16.
- Como el disipador termico se enfría con aire forzado, es posible que no se enfríe con la cubierta abierta. No compruene la alimentación ni la deje conectada durnate mucho tiempo con la curierta abierta.
- Para evitar cortocircuitos con el chasis, realice los ajustes con un destornillador de plástico.
- Si se avería un transistor u otro sistema de potencia, compruebe si están quemados los relés de salida RY801(RY802).

5.1 AJUSTE DE LA CORRIENTE DEVATIADA

1. Ponga en ON el interruptor de alimentación. Extraiga el bastidor lateral.
2. Preajuste la corriente devatiada del transistor de salida inmediatamente después de haber conectado la alimentación.

Punto de medición	Punto de ajuste	Especificación
R311 (0,22 ohm)	VR301 (POWER B Assembly)	Tensión entre resistencia 6,6 ± 0,7 mV
R313 (0,22 ohm)	VR302 (POWER B Assembly)	
R411 (0,22 ohm)	VR401 (POWER A Assembly)	
R413 (0,22 ohm)	VR402 (POWER A Assembly)	

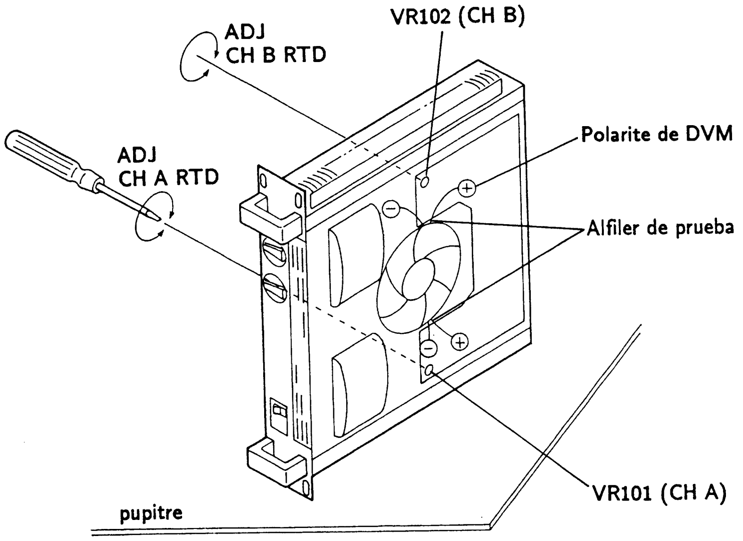
3. Instale la cubierta en la unidad, coloque ésta horizontal, y deje que se caliente durante 5 minutos.
4. Después de este tiempo de calentamiento, ajuste la corriente devatiada del transistor de salida sin desconectar la alimentacion.

Punto de medición	Punto de ajuste	Especificación
R311 (0,22 ohm)	VR301 (POWER B Assembly)	Tensión entre resistencia 11 ± 1 mV
R313 (0,22 ohm)	VR302 (POWER B Assembly)	
R411 (0,22 ohm)	VR401 (POWER A Assembly)	
R413 (0,22 ohm)	VR402 (POWER A Assembly)	

5.2 AJUSTE DE RTD

5.2.1 Precauciones para el ajuste de RTD

- El circuito de protección RTD emplaa un medidor de temperatura que da salida a un valor de CC proporcional a la temperatura del chip del transistor de potencia del disipador térmico.
- Después del ajuste de la corriente devatiada, desconecte la alimentación, extraiga las cubiertas superior e inferior, y coloque el aparato sobre su parte lateral. Conecte el voltímetro digital (DVM) a la patilla de prueba, conecte la alimentación, y después ajuste VR. El disipador térmico deberá estar a la misma temperatura que la de la sala. Realice rápidamente el ajuste antes de que el disipador térmico se caliente. Con la cubierta superior quitada, el enfriamient por aire no trabajará. Incluso en el funcionamiento libre, el disipador térmico se recalentará si no se enfria.



- Para el ajuste utilice siempre un voltímetro digital (DVM). Un polímetro produce demasiados errores.

5.2.2 Método de Ajuste

Mida la diferencia de tensión entre los terminales TP TEP y TP REF del CN107(CN108) del conjunto DRIVE con un voltimetro digital (DVM) y ajuste VR101(VR102) de forma que Tj-OUT(TP TEP) sea de +1040 ± 30 mV en relación con Tj-REF(TP REF). Este item se realiza inmediatamente después del 4 "5.1 AJUSTE DE LA CORRIENTE DEVATIADA". El valor de ajuste de 1040 mV es para una temperatura ambiental de 25℃. Si la temperatura es superior 28℃, reste 12,5 mV del valor central de ajuste por cada ℃ de temperatura superior a 25℃, Si la temperatura es inferior a 22℃ añada 12,5 mV por cada ℃ de temperaturera es inferior a 22℃.

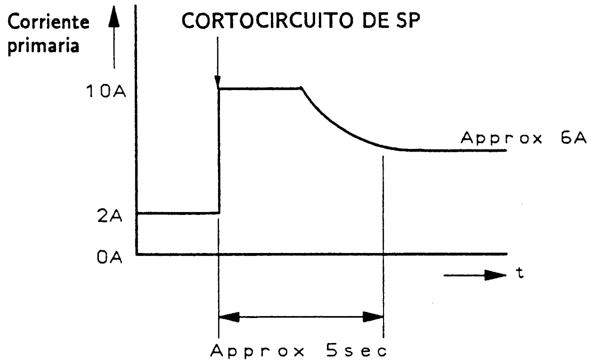
5.3 COMPROBACION DE LA OPERACION DEL PRODUCTO DESPUES DE HABER REALIZADO EL SERVICIO

Después de las reparaciones, compruebe los puntos de sequridad antes de enviar el producto.

- Comprobación de la tensión de +B — Compruebe si la tension de +VB es la especificada sin carga ni señal.
  Protección de ±15V
  Tensión analógica de ±15V

- Comprobación de la alimentación
  Compruebe la salida de cada canal con 8 o 4 ohmios. No deberá existir oscilación hasta el 10% de distorsión armónica total (THD).

- Comprobación de cortocircuito de los terminales de carga
  Cortocircuite los terminales de los altavoces durante una salida nominal de 8 ohmios. El disyuntor no deberá saltar. La corriente de alimentación primaria no deberá disminuir como se muestra en la figura siguiente.
  El disyuntor salta. → El limitador Pc no funciona adecuadamente.
  La corriente no disminuye → El circuito de protección RTD está mal ajustado o no funciona adequadamente.



- Comprobación de la corriente de polarizatión
  Conecte la alimentación, espere 10 minutos por lo menos, y después compruebe R311, R411, R313, y R413.

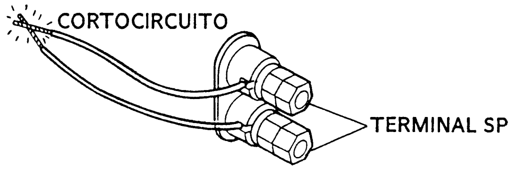
- Operatión del ventilador de CA
  Debera girar adecuadamente.

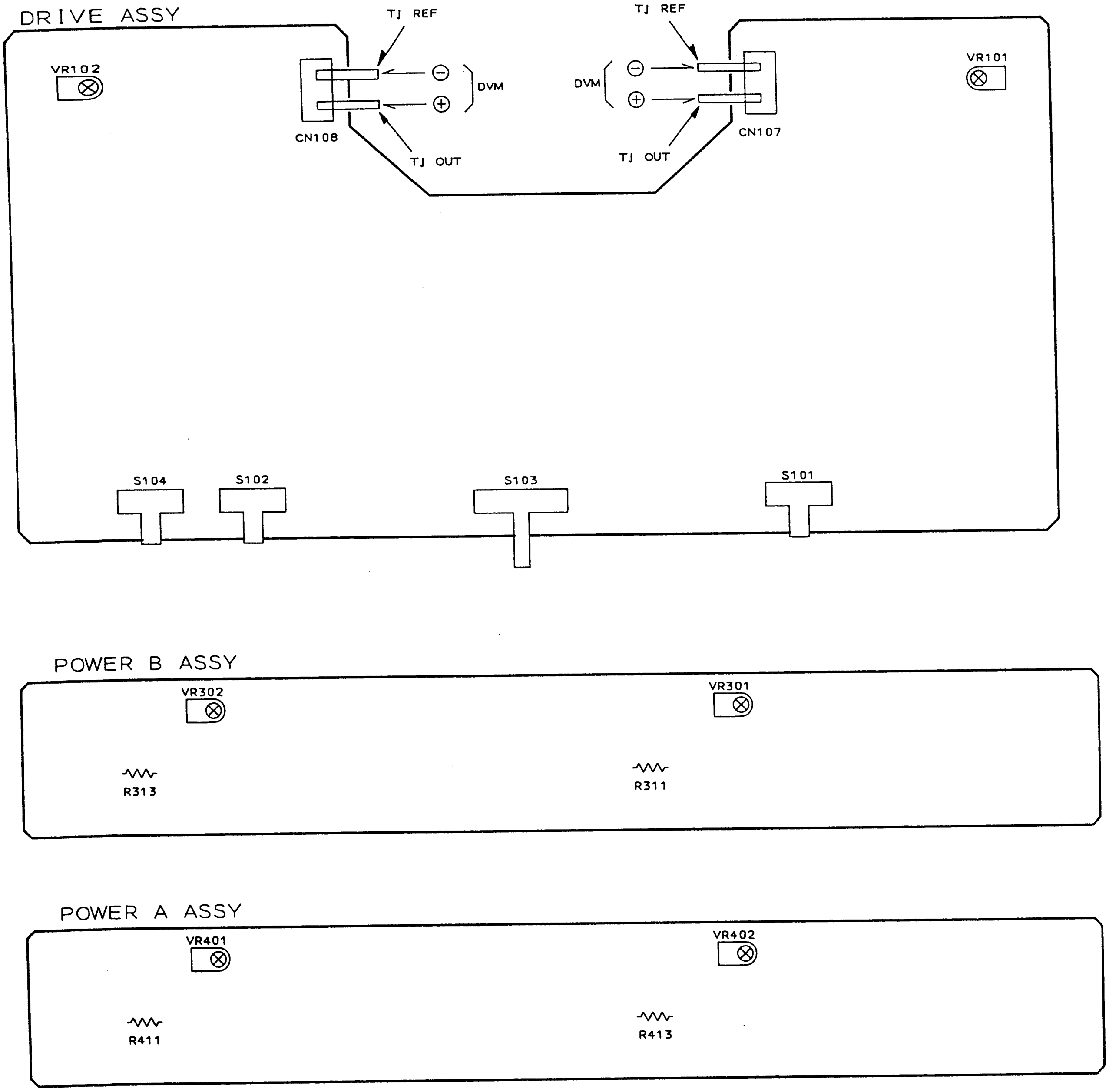
- Iluminación de los indicadores
  Compruebe si los indicadores de señal se iluminan con una salida de 5 V o mas.
  Los indicadores han sido diseñados de forma que si alguien conecta incorrectamente un conector interno o se olvida de conectarlo, los indicadores lo señalarán.

- El aparato puede pasar la prueba iuncluso con los transistores siguientes averiados. Compruebe siempre las tensiones entre la base y el emisor de estos transistores cuando realice reparaciones del conjunto POWER.
  Calidad del sonido afectada : Q704, Q708, Q703, Q707
  Circuito cortad (seguridad para cuando se pare el ventilador) : Q143, Q144

- Tornillos del panel posterior
  Todos deberán estar firmemente apretados. Estos tornillos afectan a RFI. Preste especial atención a los tornillos del conector XLR.

- Filtros de aire — Limpie los filtros de aire de la parte inferior del panel frontal y de la placa infeiror (M – V3000 solamente).
  Nota : Extienda el conductor (de calibre AWG16 por lo menos y no más de 30 cm) desde el terminal del altavoz y cortocircúitelo. Las chispas podrían romper el terminal.

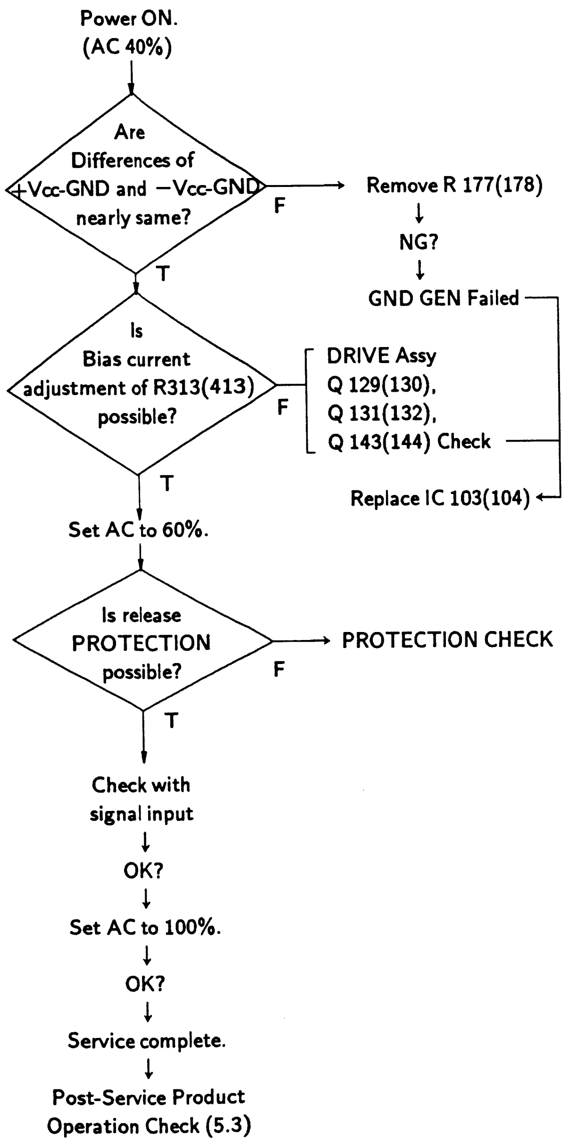



DRIVE ASSY
VR102
TJ REF
⊖
⊕
DVM
CN108
TJ OUT
TJ REF
DVM
⊖
⊕
CN107
TJ OUT
VR101
S104
S102
S103
S101
POWER B ASSY
VR302
VR301
R313
R311
POWER A ASSY
VR401
VR402
R411
R413

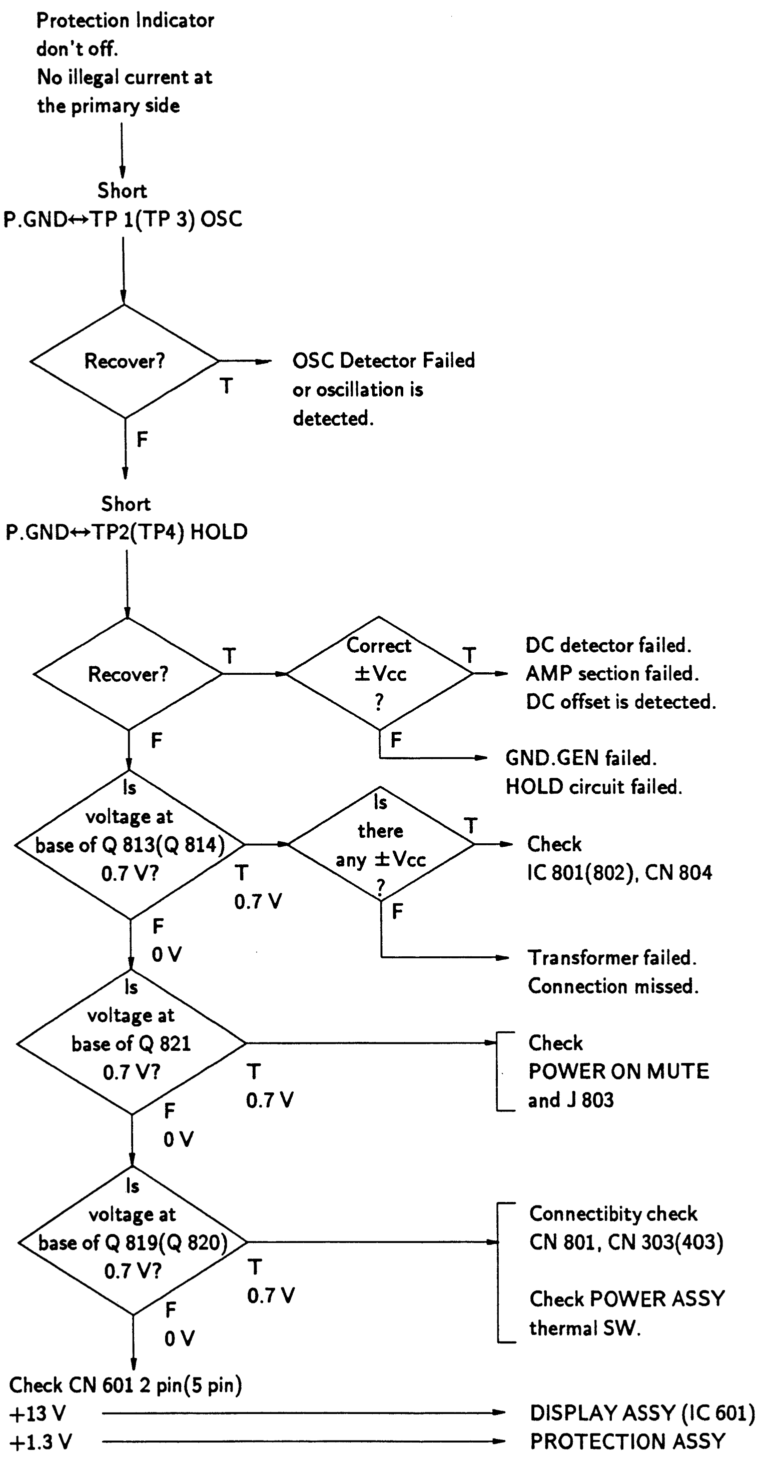
Adjustment points
Points de Réglage
Puntos de Ajuste

5.4 TROUBLESHOOTING

Operation Check

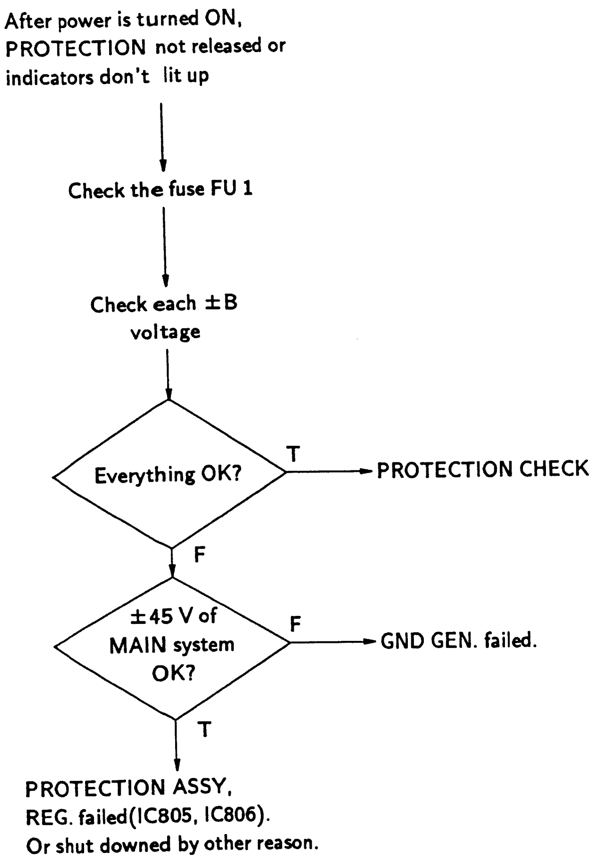

Power ON.
(AC 40%)
Are Differences of +Vcc-GND and −Vcc-GND nearly same?
F
Remove R 177(178)
NG?
GND GEN Failed
T
Is Bias current adjustment of R313(413) possible?
F
DRIVE Assy
Q 129(130),
Q 131(132),
Q 143(144) Check
Replace IC 103(104)
T
Set AC to 60%.
Is release PROTECTION possible?
F
PROTECTION CHECK
T
Check with signal input
OK?
Set AC to 100%.
OK?
Service complete.
Post-Service Product Operation Check (5.3)

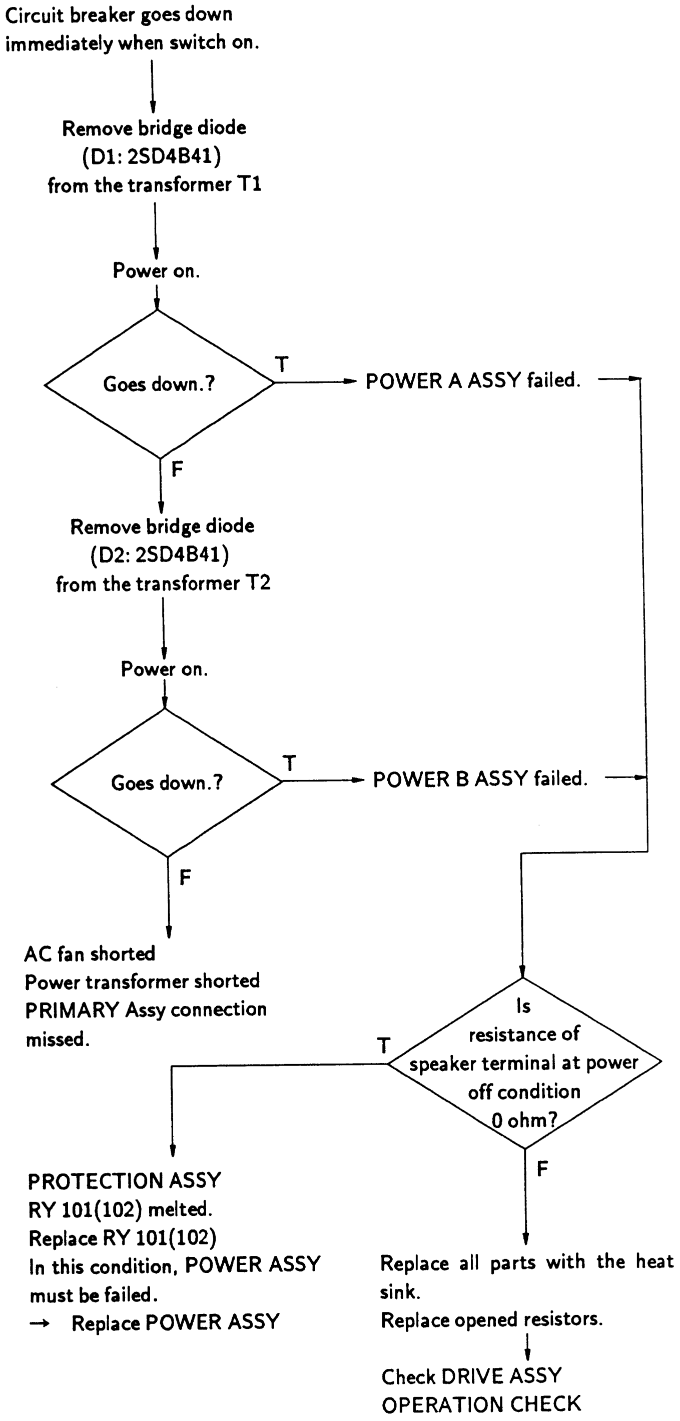
Protection Check


Protection Indicator don't off.
No illegal current at the primary side
Short P.GND↔TP 1(TP 3) OSC
Recover?
T
OSC Detector Failed or oscillation is detected.
F
Short P.GND↔TP2(TP4) HOLD
Recover?
T
Correct ±Vcc ?
T
DC detector failed.
AMP section failed.
DC offset is detected.
F
GND.GEN failed.
HOLD circuit failed.
F
Is voltage at base of Q 813(Q 814) 0.7 V?
T
0.7 V
Is there any ±Vcc ?
T
Check IC 801(802), CN 804
F
Transformer failed.
Connection missed.
F
0 V
Is voltage at base of Q 821 0.7 V?
T
0.7 V
Check POWER ON MUTE and J 803
F
0 V
Is voltage at base of Q 819(Q 820) 0.7 V?
T
0.7 V
Connectibity check CN 801, CN 303(403)
Check POWER ASSY thermal SW.
F
0 V
Check CN 601 2 pin(5 pin)
+13 V
DISPLAY ASSY (IC 601)
+1.3 V
PROTECTION ASSY

Note :

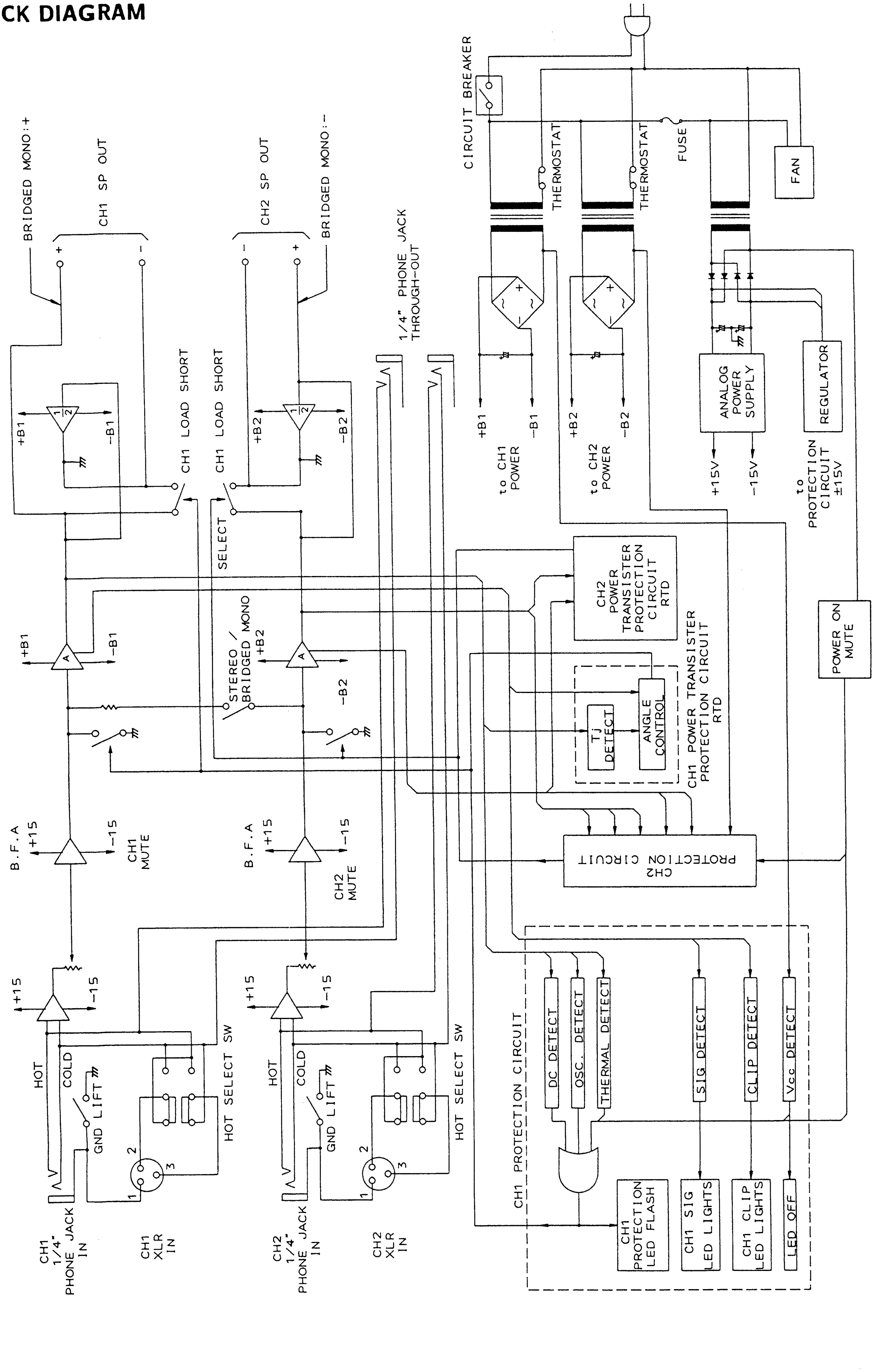
T : True
F : Failure


After power is turned ON,
PROTECTION not released or
indicators don't lit up
Check the fuse FU 1
Check each ±B
voltage
Everything OK?
T
PROTECTION CHECK
F
±45 V of
MAIN system
OK?
F
GND GEN. failed.
T
PROTECTION ASSY,
REG. failed(IC805, IC806).
Or shut downed by other reason.


Circuit breaker goes down
immediately when switch on.
Remove bridge diode
(D1: 2SD4B41)
from the transformer T1
Power on.
Goes down.?
T
POWER A ASSY failed.
F
Remove bridge diode
(D2: 2SD4B41)
from the transformer T2
Power on.
Goes down.?
T
POWER B ASSY failed.
F
AC fan shorted
Power transformer shorted
PRIMARY Assy connection
missed.
Is
resistance of
speaker terminal at power
off condition
0 ohm?
T
PROTECTION ASSY
RY 101(102) melted.
Replace RY 101(102)
In this condition, POWER ASSY
must be failed.
→ Replace POWER ASSY
F
Replace all parts with the heat
sink.
Replace opened resistors.
Check DRIVE ASSY
OPERATION CHECK

6. CIRCUITS DESCRIPTION

6.1 BLOCK DIAGRAM


CIRCUIT BREAKER
THERMOSTAT
THERMOSTAT
FUSE
FAN
BRIDGED MONO:+
CH1 SP OUT
CH2 SP OUT
BRIDGED MONO:-
1/4" PHONE JACK THROUGH-OUT
CH1 LOAD SHORT
CH1 LOAD SHORT
SELECT
+B1
-B1
+B2
-B2
1/2
to CH1 POWER
to CH2 POWER
ANALOG POWER SUPPLY
REGULATOR
+15V
-15V
to PROTECTION CIRCUIT ±15V
CH2 POWER TRANSISTER PROTECTION CIRCUIT RTD
CH1 POWER TRANSISTER PROTECTION CIRCUIT RTD
Tj DETECT
ANGLE CONTROL
POWER ON MUTE
STEREO / BRIDGED MONO
A
B.F.A
+15
-15
CH1 MUTE
CH2 MUTE
CH2 PROTECTION CIRCUIT
CH1 PROTECTION CIRCUIT
DC DETECT
OSC. DETECT
THERMAL DETECT
SIG DETECT
CLIP DETECT
Vcc DETECT
CH1 PROTECTION LED FLASH
CH1 SIG LED LIGHTS
CH1 CLIP LED LIGHTS
LED OFF
HOT
COLD
GND LIFT
HOT SELECT SW
1
2
3
CH1 1/4" PHONE JACK IN
CH1 XLR IN
CH2 1/4" PHONE JACK IN
CH2 XLR IN

6.2 PROTECTION SYSTEM

The protection circuits comprise the detection circuits that monitor the speaker output DC output, sub-sonic output, and ultra-sonic output, the limiter for protecting the power transistors from overloads, and a temperature detection section protecting against abnormal temperature rise. The speaker output detection circuit has a hold function that is not recovered without a reset by switching off the power.

When the protection circuit operates, the power amp is cut off to protect the load and the amp itself. In the unlikely event of device breakdown and the amp being disabled by the cutoff, the speaker pins are shorted with a relay to protect the load. In this case, the circuit breaker works and the amp itself is also shut off from the power supply.

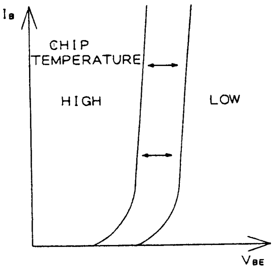
The muting for preventing large popping noises also functions using the protection circuit.

The input signal muting circuit is controlled with the temperature data from the patented Rapid Thermal Detecting Protection using the power transistor V_{BE} temperature change. This way the power transistor chip temperature is not exceeded in any operating environment or for input signal.

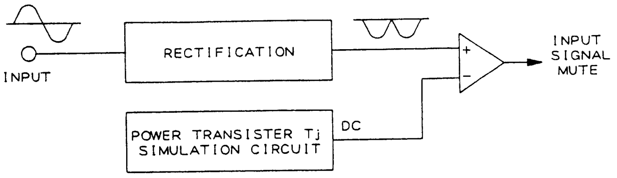
1) Rapid Thermal Detection Protection (Pat. Pending)

The $V_{BE} - I_B$ curve of transistors varies with the chip temperature as shown in the figure on the right. The V_{BE} change has a temperature coefficient of $-2mV/℃$. Taking advantage of this characteristic, another small V_{BE} transistor can be used to measure this movement and find the power transistor and simulation transistor chip termperature difference.

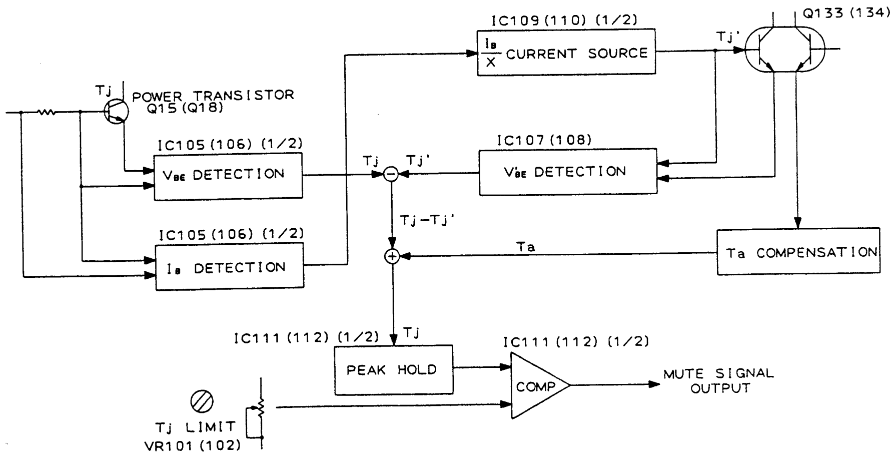
A single-chip dual transistor is used for the simulation transistor and the simulation transistor chip temperature is measured and added to the difference between the transistors to obtain the power transistor chip temperature.



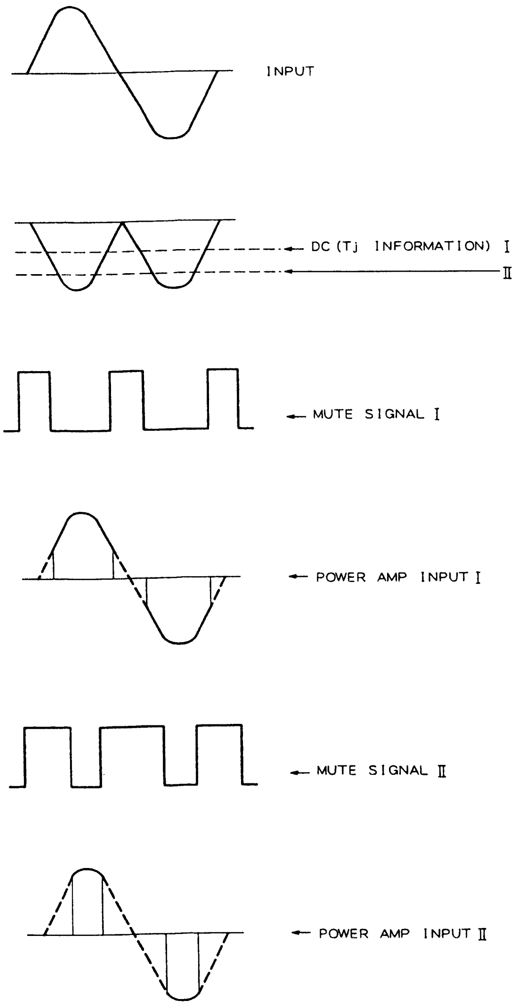
By varying the conductance angle of the power amp input signal according to the data from the power transistor Tj simulation circuit, the temperature can be controlled without stopping the amp output. This control keeps Tj from exceeding 150℃ even if the power transistor temperature goes up for some reason.



INPUT
RECTIFICATION
POWER TRANSISTER Tj SIMULATION CIRCUIT
DC
+
−
INPUT SIGNAL MUTE

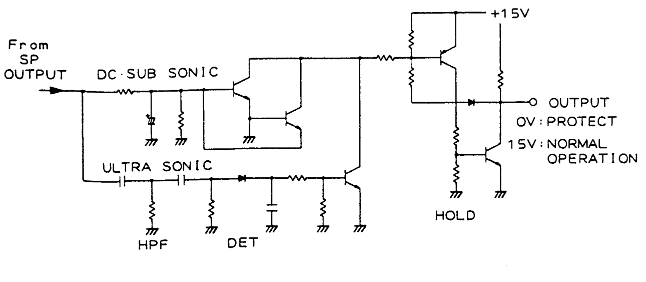


IC109 (110) (1/2)
IB/X CURRENT SOURCE
Tj'
Q133 (134)
Tj
POWER TRANSISTOR Q15 (Q18)
IC105 (106) (1/2)
VBE DETECTION
Tj
Tj'
IC107 (108)
V'BE DETECTION
Tj−Tj'
IC105 (106) (1/2)
IB DETECTION
Ta
Ta COMPENSATION
IC111 (112) (1/2)
Tj
PEAK HOLD
IC111 (112) (1/2)
COMP
MUTE SIGNAL OUTPUT
Tj LIMIT
VR101 (102)


INPUT
DC (Tj INFORMATION) I
II
MUTE SIGNAL I
POWER AMP INPUT I
MUTE SIGNAL II
POWER AMP INPUT II

2) Output Protection circuit section

The DC sub-sonic detection section uses existing circuits. The ultra-sonic detection section cuts off the amp when an ultra-high region signal is input to the power amp and in the unlikely event of oscillation. The speaker output is passed through a high pass filter to take out just the ultra-high area component and wave detected. This eliminates damage to the load and breakdown due to amp oscillation. The detection sensitivity has been set so that the detection is not triggered by 10 Hz - 20 kHz full swing, taking the amp power band into account.

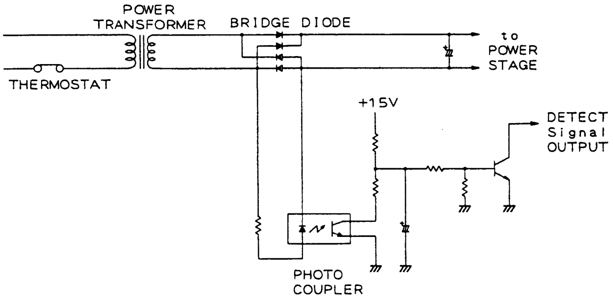

From SP OUTPUT
DC·SUB SONIC
ULTRA SONIC
HPF
DET
+15V
OUTPUT
0V: PROTECT
15V: NORMAL OPERATION
HOLD

3) Transformer thermostat operation detection

If a power transformer for the power stage overheats, its built-in thermostat opens up and the primary side is switched off. When this is detected, the power amp for that channel is cut off immediately to prevent the generation of popping noise.

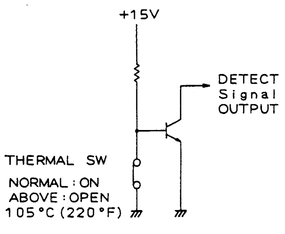
In order to transmit the detection immediately to the power off circuit, it is sent to the protection circuit using an AC half-wave photocoupler. Since the amp uses a grounded bridge circuit, the power stage power supply fluctuates dynamically relative to ground and the photocoupler determines that voltage difference.

This circuit is designed to be fail safe for forgetting to plug in the connector or other work process mistake or service mistake: if the photocoupler LED is not lit up, the amp does not come on.


POWER TRANSFORMER
BRIDGE DIODE
THERMOSTAT
to POWER STAGE
+15V
DETECT Signal OUTPUT
PHOTO COUPLER

4) Heat sink temperature detection

When the thermal switch attached to the heat sink detects overheating, it opens and cuts off the power amp. An always-on switch is used to make this circuit failsafe for work process failures, service mistakes, parts breakdown, etc.


+15V
DETECT Signal OUTPUT
THERMAL SW
NORMAL : ON
ABOVE : OPEN
105°C (220°F)

6.3 DISPLAY SYSTEM

The operating state is displayed with LEDs so that it can be seen at a glance. When there is a signal at the output, the SIG indicator lights up. If excess input causes amp clipping, the CLIP indicator lights up. Since the Clip output level fluctuates with the load conditions, NFB deviation is detected and the true clip displayed.

If there is any type of abnormality, the PROTECT indicator blinks, so you can see that there is a problem at a glance even from a distance. The Power ON indicator lights up while the circuit breaker is On.

● Indicator section

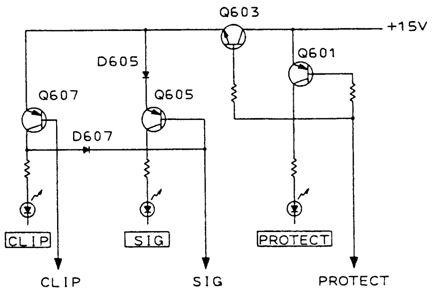
The signal display lights up when a signal is output from the power amp. The clip display detects power amp NFB deviation and lights up for clip display. It displays the true clip for any load conditions.

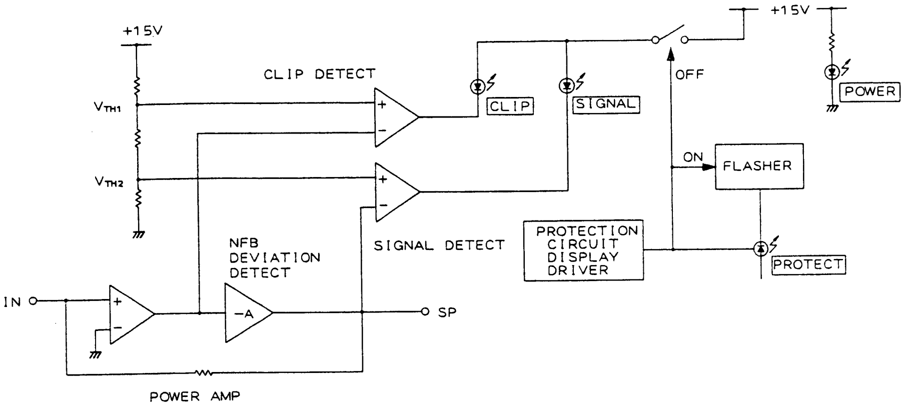
When the protection circuit is triggered, the clip and signal display goes out and the protection display blinks.

If the fuse is blown and the sub-transformer does not come On, the power display does not light up. In this case the amp does not come on and the cutoff circuit is working, so the power is not on.

Q601, Q605, and Q607 drive the PROTECT, SIGNAL, and CLIP LEDs, respectively. Q603 cuts off the other indicators when the PROTECTION indicator lights up and D607 cuts off the SIGNAL indicator when the CLIP indicator lights up.

This way, no more than one LED can lights up at a time.


Q603
+15V
Q601
D605
Q607
Q605
D607
CLIP
SIG
PROTECT
CLIP
SIG
PROTECT


+15V
+15V
CLIP DETECT
V_{TH1}
V_{TH2}
CLIP
SIGNAL
POWER
OFF
ON
FLASHER
NFB
DEVIATION
DETECT
SIGNAL DETECT
PROTECTION
CIRCUIT
DISPLAY
DRIVER
PROTECT
IN
-A
SP
POWER AMP

6.4 INPUT SECTION

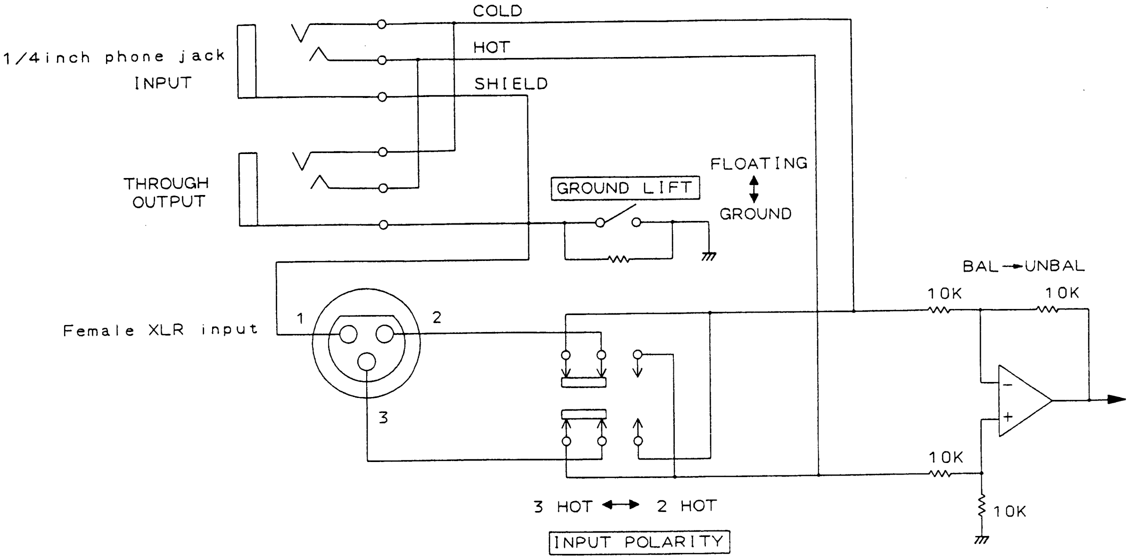
The Ground Lift switch lifts the input signal ground from the chassis. This makes it possible to reduce the harm caused by ground loops, for example when multiple amps are mounted on the same rack.

The input polarity switch sets the XLR input + side input to No. 2 or No. 3.

For the phone jack, the tip is always + and the ring always −.

All input and output jacks are connected in parallel.

Since the through output is output directly, even if one unit breaks down and goes off, output can be obtained with the power off.

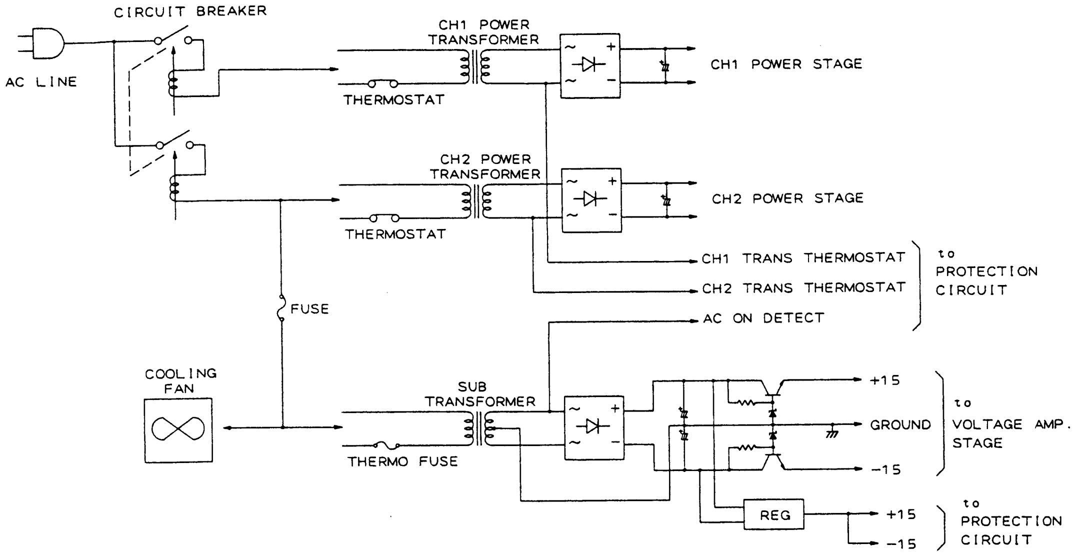

COLD
HOT
SHIELD
1/4inch phone jack
INPUT
THROUGH
OUTPUT
FLOATING
GROUND LIFT
GROUND
BAL→UNBAL
10K
10K
Female XLR input
1
2
3
10K
10K
3 HOT ↔ 2 HOT
INPUT POLARITY

6.5 POWER SUPPLY SECTION

The power stage has independent power supplies for CH1 and CH2. If a transformer overheats, just that channel stops operating. When the transformer cools off, it is restored. Single-channel output is possible. Since the power stage transformers have thermostats, the small signal system and protection circuit system are fed with independent sub-transformers.

If a sub-transformer fuse blows, the AC power supply for the set goes off and the amp output is cut off.

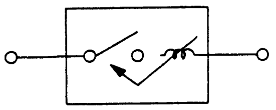
If excess current flows due to a break down or any other reason, the over current breaker in the power switch switches the power switch itself Off to prevent any more serious trouble.


CIRCUIT BREAKER
AC LINE
CH1 POWER TRANSFORMER
THERMOSTAT
CH1 POWER STAGE
CH2 POWER TRANSFORMER
THERMOSTAT
CH2 POWER STAGE
CH1 TRANS THERMOSTAT
CH2 TRANS THERMOSTAT
AC ON DETECT
to PROTECTION CIRCUIT
FUSE
COOLING FAN
SUB TRANSFORMER
THERMO FUSE
+15
GROUND
-15
to VOLTAGE AMP. STAGE
REG
+15
-15
to PROTECTION CIRCUIT

6.6 CIRCUIT BREAKER

The circuit breaker used in the power switch uses the pull-in force of the coil in series with the switch contacts. When excess current flows in the circuit, the switch ratchet mechanism forces Off the switch.

The circuit breaker has an inertia delay, a function that avoids the protect operation from being triggered by inrush current. This provides greater reliability than fuses for devices such as this amp that have large inrush current. One big advantage of this amp is that even if the fuse is blown by misuse of this amp, this can be handled without servicing the amp.



7. FOR M-V3000/HEBWZ, M-V2000/KUC AND HEBWZ TYPES

CONTRAST OF MISCELLANEOUS PARTS

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

M-V3000/HEBWZ, M-V2000/KUC, HEBWZ and M-V3000/KUC have the same construction except for the following :

Mark	Symbol & Description	Part No.				Remarks
		M−V3000 /KUC	M−V2000 /KUC	M−V3000 /HEBWZ	M−V2000 /HEBWZ	
	PRIMARY assembly	AWZ4201	AWZ4201	AWZ4634	AWZ4634	
	DRIVE assembly	AWZ4208	AWZ4198	AWZ4636	AWZ4635	
	POWER A assembly	AWZ4210	AWZ4200	AWZ4641	AWZ4640	
	POWER B assembly	AWZ4209	AWZ4199	AWZ4639	AWZ4638	
	PROTECTION assembly	AWZ4266	AWZ4266	AWZ4637	AWZ4637	
⚠	AC power cord	ADG1121	ADG1121	ADG1113	ADG1113	
⚠	FU1 Fuse (800mA/125V)	AKE−118	AKE−118	....	....	
⚠	FU1 Fuse (T400mA/250V)	....	....	AEK−504	AEK−504	
⚠	FU2,FU3 Fuse(T6.3A/250V)	....	....	AEK−516	AEK−516	
⚠	CN A 2P Speaker terminal	AKE1037	AKE1037	AKE1039	AKE1039	
⚠	CN B 2P Speaker terminal	AKE1038	AKE1038	AKE1040	AKE1040	
	Screw	....	....	BBZ30P100FZK	BBZ30P100FZK	for AC inlet
⚠	CN3 1P AC inlet	....	....	AKP1115	AKP1115	for Rear Panel
⚠	S4Voltage selector(AC220-230/240V)	....	....	AKX1004	AKX1004	for Rear Panel
⚠	S3 Circuit breaker	ASM1001	ASM1001	ASM1002	ASM1002	
⚠	T1, T2 Power transformer (AC120V)	ATS1429	ATS1432	....	....	
⚠	T1, T2 Power transformer (AC220-230/240V)	....	....	ATS1430	ATS1433	
⚠	T3 Power transformer (AC120V)	ATT1199	ATT1199	....	....	
⚠	T3 Power transformer (AC220-230/240V)	....	....	ATT1200	ATT1200	
⚠	Fan motor (FAN)	AXM1015	AXM1015	AXM1016	AXM1016	
	C5, C6 Capacitor	....	....	CKDYB102K500	CKDYB102K500	for D1, D2
	C7, C8 Capacitor (0.047/25)	....	....	ACG−009	ACG−009	for SP teminal
	C9−C12 Capacitor	....	....	CKDYB472K500	CKDYB472K500	for SP teminal
⚠	R3, R4 Fusible Resistor	....	....	RFA1/4PS4R7J	RFA1/4PS4R7J	for D1, D2
⚠	Q4, Q5, Q9, Q16 Transistor	2SC3907P	....	2SC3907P	....	
⚠	Q20, Q21, Q25, Q32 Transistor	2SA1516P	....	2SA1516P	....	
	Screw (GND)	BBZ30P080FZK	BBZ30P080FZK	ABA−176	ABA−176	for Rear panel
NSP	Heatsink cover	AEB1223	....	AEB1223	....	
NSP	CN Terminal (250)	AKF1028	AKF1028	....	....	
	Front panel	ANB1530	ANB1531	ANB1530	ANB1531	
NSP	Rear panel	ANC1911	ANC1914	ANC1910	ANC1913	

Mark	Symbol & Description	Part No.				Remarks
		M−V3000 /KUC	M−V2000 /KUC	M−V3000 /HEBWZ	M−V2000 /HEBWZ	
	Cover assembly	ANE1376	ANE1372	ANE1376	ANE1372	
NSP	Plate	ANG1720	ANG1720	············	············	
NSP	Wind plate	ANG1733	············	ANG1733	············	
	AC cord stopper	BEC1024	BEC1024	············	············	
	Screw	PMZ50P450FMC	PMZ50P450FMC	BBZ30P100FZK	BBZ30P100FZK	for power transformer
	Washer	WH50FMC	WH50FMC	············	············	
	Packing case	AHD2447	AHD2450	AHD2446	AHD2449	
	Operating instructions (English)	ARB1395	ARB1395	············	············	
	Operating instructions (English, French, German, Italian, Spanish)	············	············	ARE1249	ARE1249	

PRIMARY ASSEMBLY

Although AWZ4634 and AWZ4201 are different in part number, they have the same service parts.

DRIVE ASSEMBLY

AWZ4198, AWZ4635, AWZ4636 and AWZ4208 have the same construction except for the following :

Mark	Symbol & Description	Part No.				Remarks
		AWZ4208	AWZ4198	AWZ4636	AWZ4635	
	C155,C156	············	············	CCCSL100D500	CCCSL100D500	
	C157, R158	CQPA103J100	CQPA103J100	CKDYB102K500	CKDYB102K500	
	C159−C166	············	············	CCDSL101K500	CCDSL101K500	
	C167−C170	············	············	CKCYB821K500	CKCYB821K500	
	C201, C202, C205, C206	············	············	CKDYB472K50	CKDYB472K50	
	C207	············	············	CKDYB103K50	CKDYB103K50	
	C209, C210	············	············	CCDSL101K500	CCDSL101K500	
	C211, C212	············	············	CCDSL100D500	CCDSL100D500	
	R105−R108	RN1/2PC1152F	RN1/2PC1002F	RN1/2PC1152F	RN1/2PC1002F	
	R281−R284	RD1/4PMF241J	RD1/4PMF391J	RD1/4PMF241J	RD1/4PMF391J	
	R285−R288	RD1/2PM183J	RD1/2PM223J	RD1/2PM183J	RD1/2PM223J	
	R295−R298	RD1/8PM302J	RD1/8PM202J	RD1/8PM302J	RD1/8PM202J	

POWER A ASSEMBLY

AWZ4200, AWZ4640, AWZ4641 and AWZ4210 have the same construction except for the following :

Mark	Symbol & Description	Part No.				Remarks
		AWZ4210	AWZ4200	AWZ4641	AWZ4640	
	C407	....	....	CKDYB821K500	CKDYB821K500	
	C408	....	....	CKDYB472K500	CKDYB472K500	
	C409	....	....	CQMA103K400	CQMA103K400	
	R406, R407, R420, R421	ACN1096	....	ACN1096	....	

POWER B ASSEMBLY

AWZ4199, AWZ4638, AWZ4639 and AWZ4209 have the same construction except for the following :

Mark	Symbol & Description	Part No.				Remarks
		AWZ4209	AWZ4199	AWZ4639	AWZ4638	
	C307	....	....	CKDYB821K500	CKDYB821K500	
	C308	....	....	CKDYB472K500	CKDYB472K500	
	C309	....	....	CQMA103K400	CQMA103K400	
	R308, R309, R318, R319	ACN1096	....	ACN1096	....	

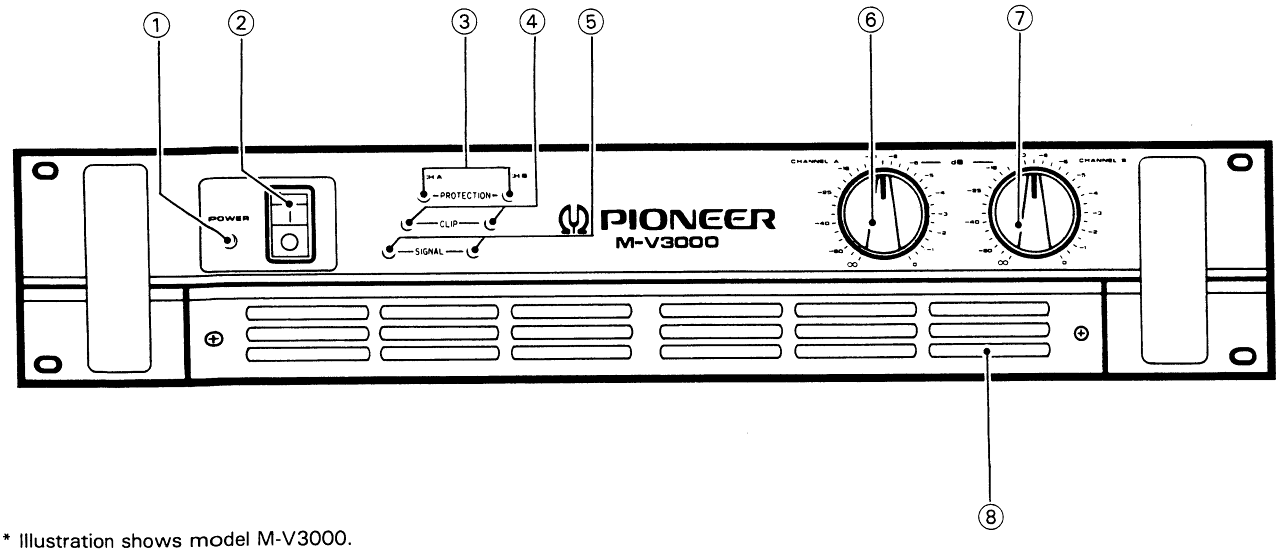
PROTECTION ASSEMBLY

AWZ4637 and AWZ4226 have the same construction except for the following :

Mark	Symbol & Description	Part No.		Remarks
		AWZ4226	AWZ4637	
	D825, D826	RD15ESB3	RD15ESB1	
	C812	CEHAQ100M50	CEJA100M35	
	C833, C834, C839	....	CKDYB472K500	

8. PANEL FACILITIES

FRONT PANEL FACILITIES



* Illustration shows model M-V3000.

① POWER indicator

This lights when POWER is switched on.

② POWER switch (Circuit breaker)

Press I to switch on, and press O to switch off.
In abnormal conditions, power is automatically switched off (see page 9).

③ PROTECTION indicator

This flashes for about two seconds after POWER has been switched on, indicating operation of the mute circuit. While this indicator is flashing, there is no sound from the speakers. After this indicator has finished flashing to indicate the operation of protection circuitry due to some reason, operation returns to normal. However, operation does not return to normal after operation of the output DC detection, subsonic detection, and ultrasonic detection sections. Turn the power on again.

④ CLIP indicator

This lights for indicating clipping due to excessive input to the amplifier. Adjust input level with the input attenuator so that this indicator does not light.

⑤ SIGNAL indicators

These indicate whether a signal is being output from the speaker outputs of the amplifier's CHANNEL A and CHANNEL B. They light when the input signal level is 2.5 V (5 V or more if monophonic) or more. When using the amplifier as a monophonic amplifier, confirm that the indicator for CHANNEL A is lit. The indicator for CHANNEL B lights in the same way.

⑥ Input attenuator (CHANNEL A)

This attenuator is for adjusting CHANNEL A input signal level. When using the amplifier as a monophonic amplifier, use this attenuator to adjust signal input level. (The CHANNEL B attenuator has no connection with this operation.)

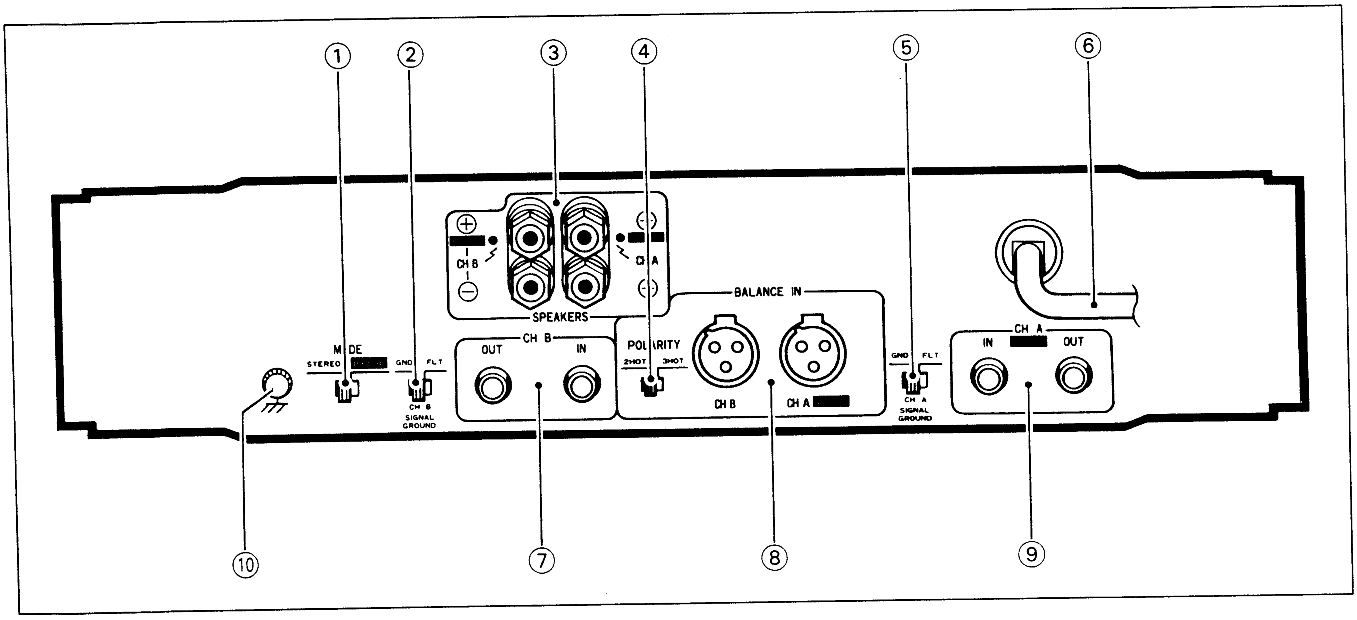
⑦ Input attenuator (CHANNEL B)

This attenuator is for adjusting CHANNEL B input signal level.

⑧ Filter cover

The air intake for the forced cooling system is behind this filter cover. During operation, be sure not to prevent the flow of air by blocking the intake with objects, or by allowing such objects as paper to enter the intake. To remove the filter cover, simply remove the ⊕ screw on the front. This enables regular inspections for dirt and dust. When there is dirt and dust on the internal filter, refer to page 9, and clean the filter.

REAR PANEL FACILITIES



① MODE switch (STEREO/BRIDGE)

This switches between stereo and bridge (monophonic) operation. Switch to the best setting for your application needs. Switch between settings when the POWER is switched off. When using as a monophonic amplifier, refer to "BRIDGE CONNECTION" on page 8.

② CHANNEL B SIGNAL GROUND switch (GND/FLT)

This switch determines whether CHANNEL B input ground and the chassis are connected or not. (During normal operation select the GND side.)

When there is hum due to a ground loop, switching to FLT disconnects the input ground and the chassis. This may eliminate the hum.

③ SPEAKERS output terminals

When using as a 2-channel amplifier, speakers with an impedance of 4 Ω to 16 Ω can be connected. When using as a monophonic amplifier, speakers with an impedance of 8 Ω to 32 Ω can be connected. (See page 15)

④ POLARITY switch (2 HOT/3 HOT)

This switches the polarity of XLR type connectors (2 HOT or 3 HOT). Use to switch to the XLR type connector polarity of other components you are using with the amplifier.

⑤ CHANNEL A SIGNAL GROUND switch (GND/FLT)

This switch determines whether CHANNEL A input ground and the chassis are connected or not. (During normal operation select the GND side.)

When there is hum due to a ground loop, switching to FLT disconnects the input ground and the chassis. This may eliminate the hum.

⑥ Power cord

⑦ CHANNEL B IN/OUT jacks

A 1/4" TRS jack. These jack's IN/OUT are internally connected.

⑧ BALANCE IN (CH A/CH B) connectors

XLR type balance input connectors.

⑨ CHANNEL A IN/OUT jacks

A 1/4" TRS jack. These jack's IN/OUT are internally connected.

⑩ Ground terminal

When a chassis earth is required, use this ground terminal.

9. SPECIFICATIONS

Continuous average power output of 750 watts* per channel, min., at 8 ohms, from 20 Hz to 20,000 Hz with no more than 0.1 % total harmonic distortion.**

M-V2000

Continuous power output	
20 Hz to 20 kHz, 0.1 %, 8 Ω	220 W + 220 W
20 Hz to 20 kHz, 0.1 %, 4 Ω	350 W + 350 W
20 Hz to 20 kHz, 0.1 %, 8 Ω, bridged	700 W
Total harmonic distortion	
20 Hz to 20 kHz, 180 W, 4 Ω	0.01 %
Damping factor	
20 Hz to 20 kHz, 8 Ω	150
1 kHz, 8 Ω	470
Input sensitivity	775 mV (0 dBm)
Voltage gain	35 dB (ATT: MAX, 2-channel) 41 dB (ATT: MAX, bridged)
Input impedance	
Balance	20 kΩ
Unbalanced	10 kΩ
Output load impedance	
When using as a 2-channel amplifier	4 Ω to 16 Ω
When using as a monophonic amplifier	8 Ω to 32 Ω
Frequency response	20 Hz to 20 kHz, $^{+0}_{-0.2}$ dB, 4 Ω
S/N ratio	102 dB (IHF-A, input shorted)
Output offset	±10 mV
Crosstalk	
1 kHz, 8 Ω, rated output	90 dB
20 Hz to 20 kHz, 8 Ω, rated output	75 dB

M-V3000

Continuous power output	
20 Hz to 20 kHz, 0.1 %, 8 Ω	320 W + 320 W
20 Hz to 20 kHz, 0.1 %, 4 Ω	500 W + 500 W
20 Hz to 20 kHz, 0.1 %, 8 Ω, bridged	1000 W
Total harmonic distortion	
20 Hz to 20 kHz, 250 W, 4 Ω	0.01 %
Damping factor	
20 Hz to 20 kHz, 8 Ω	150
1 kHz, 8 Ω	470
Input sensitivity	775 mV (0 dBm)
Voltage gain	36.5 dB (ATT: MAX, 2-channel) 42.5 dB (ATT: MAX, bridged)
Input impedance	
Balance	20 kΩ
Unbalanced	10 kΩ
Output load impedance	
When using as a 2-channel amplifier	4 Ω to 16 Ω
When using as a monophonic amplifier	8 Ω to 32 Ω
Frequency response	20 Hz to 20 kHz, $^{+0}_{-0.2}$ dB, 4 Ω
S/N ratio	102 dB (IHF-A, input shorted)
Output offset	±10 mV
Crosstalk	
1 kHz, 8 Ω, rated output	90 dB
20 Hz to 20 kHz, 8 Ω, rated output	75 dB

Protection circuits

DC, subsonic detection circuit
Oscillation, ultrasonic detection circuit
RTD protection circuit (transistor chip temperature detection)
Heat sink temperature detection
Power transformer temperature detection
Circuit breaker: 15 A x 2 channels
Power on/off pop noise muting

Features

Circuit breaker built into power switch
Independent input attenuators for each channel with dB marking
Output signal indicator
Output clip indicator
XLR polarity switch
Floating ground (ground lifter)
Switchable between 2-channel and bridged monophonic operation

Input terminals

Female XLR type balanced connectors
1/4″ TRS jacks

Output terminals

1/4″ TRS jacks (throughput output)
3/4″ (19 mm) binding post speaker terminal banana plug capability

Cooling system

Forced air cooling, front panel intake, side panel exhaust

Power Supply, Miscellaneous

Power requirements	AC 120 V, 60 Hz
Power consumption	720 W, 990 VA (M-V2000) 825 W, 1130 VA (M-V3000)
Dimensions	482.6 (W) x 96.1 (H) x 452.5 (D) mm 19 (W) x 3-3/4 (H) x 17-13/16 (D) in
Weight	21 kg (46 lb 5 oz) (M-V2000) 22.4 kg (49 lb 6 oz) (M-V3000)

Accessories

Operating Instructions	1

* *Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Output Claims for Amplifier.*
** *Measured by Audio Spectrum Analyzer.*

NOTE:
Specifications and design are subject to possible modification without notice due to improvements.